DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Water Quality Control Commission

REGULATION NO. 38 - CLASSIFICATIONS AND NUMERIC STANDARDS FOR SOUTH PLATTE RIVER BASIN, LARAMIE RIVER BASIN, REPUBLICAN RIVER BASIN, SMOKY HILL RIVER BASIN

5 CCR 1002-38

[Editor's Notes follow the text of the rules at the end of this CCR Document.]

38.1 AUTHORITY

These regulations are promulgated pursuant to section 25-8-101 et seq C.R.S., as amended, and in particular, 25-8-203 and 25-8-204.

38.2 PURPOSE

These regulations establish classification and numeric standards for the South Platte River, the Laramie River, the Republican River and the Smoky Hill River, including all tributaries and standing bodies of water as indicated in section 38.6. The classifications identify the actual beneficial uses of the water. The numeric standards are assigned to determine the allowable concentrations of various parameters. Discharge permits will be issued by the Water Quality Control Division to comply with basic, narrative, and numeric standards and control regulations so that all discharges to waters of the state protect the classified uses. ~~(See section 31.14).~~ It is intended that these and all other stream classifications and numeric standards be used in conjunction with and be an integral part of Regulation No. 31~~.0 -~~ Basic Standards and Methodologies for Surface Water~~BASIC STANDARDS AND METHODOLOGIES FOR SURFACE WATER~~.

38.3 INTRODUCTION

These regulations and Tables present the classifications and numeric standards assigned to stream segments listed in the attached Tables (See ~~section 38.6~~Appendix 38-1). As additional stream segments are classified and numeric standards for this drainage system are adopted, they will be added to or replace the numeric standards in the Tables in ~~section 38.6~~Appendix 38-1. Any additions or revisions of classifications or numeric standards can be accomplished only after public hearing by the Commission and proper consideration of evidence and testimony as specified by the statute and the "basic regulations".

38.4 DEFINITIONS

See the Colorado Water Quality Control Act and the codified water quality regulations for definitions.

38.5 BASIC STANDARDS

(1) ~~TEMPERATURE~~Temperature

All waters of the South Platte, Laramie, Republican and Smoky Hill River Basins are subject to the following standard for temperature. (Discharges regulated by permits, which are within the permit limitations, shall not be subject to enforcement proceedings under this standard.) Temperature shall maintain a normal pattern of diurnal and seasonal fluctuations with no abrupt changes and shall have no increase in temperature of a magnitude, rate, and duration deemed

deleterious to the resident aquatic life. This standard shall not be interpreted or applied in a manner inconsistent with section 25-8-104, C.R.S.

(2) ~~QUALIFIERS~~Qualifiers

See Basic Standards and Methodologies for Surface Water for a listing of organic standards at 31.11 and metal standards found at 31.16 Table III. The column in the tables headed "Water + Fish" are presumptively applied to all A~~a~~quatic L~~l~~ife C~~c~~lass 1 streams which also have a W~~w~~ater S~~s~~upply classification, and are applied to A~~a~~quatic L~~l~~ife C~~c~~lass 2 streams which also have a W~~w~~ater S~~s~~upply classification, on a case-by-case basis as shown in ~~the Tables 38.6~~Appendix 38-1. The column in the tables at 31.11 headed "Fish Ingestion" is presumptively applied to all A~~a~~quatic L~~l~~ife C~~c~~lass 1 streams which do not have a W~~w~~ater S~~s~~upply classification, and are applied to A~~a~~quatic L~~l~~ife C~~c~~lass 2 streams which do not have a W~~w~~ater S~~s~~upply classification, on a case-by-case basis, as shown in ~~the Tables in 38.6~~Appendix 38-1.

(3) ~~URANIUM~~Uranium

(a) All waters of the South Platte River Basin are subject to the following basic standard for uranium, unless otherwise specified by a water quality standard applicable to a particular segment. However, discharges of uranium regulated by permits which are within these permit limitations shall not be a basis for enforcement proceedings under this basic standard.

(b) Uranium level in surface waters shall be maintained at the lowest practicable level.

(c) In no case shall uranium levels in waters assigned a W~~w~~ater S~~s~~upply classification be increased by any cause attributable to municipal, industrial, or agricultural discharges so as to exceed 16.8-30 µg/L~~l~~ or naturally-occurring concentrations (as determined by the State of Colorado), whichever is greater.

(i) The first number in the 16.8-30 µg/L~~l~~ range is a strictly health-based value, based on the Commission's established methodology for human health-based standards. The second number in the range is a maximum contaminant level, established under the federal Safe Drinking Water Act that has been determined to be an acceptable level of this chemical in public water supplies, taking treatability and laboratory detection limits into account. Control requirements, such as discharge permit effluent limitations, shall be established using the first number in the range as the ambient water quality target, provided that no effluent limitation shall require an "end-of-pipe" discharge level more restrictive than the second number in the range. Water bodies will be considered in attainment of this standard, and not included on the Section 303(d) List, so long as the existing ambient quality does not exceed the second number in the range.

(4) ~~NUTRIENTS~~Nutrients

Prior to ~~May~~ December 31, 2022 for chlorophyll *a* and prior to December 31, 2027 for total phosphorus, interim nutrient values will be considered for adoption only in the limited circumstances defined at 31.17(e), (f), and (g). These circumstances include headwaters, Direct Use Water Supply (DUWS) Lakes and Reservoirs, and other special circumstances determined by the Commission~~. Additionally, prior to May 31, 2017, only total phosphorus and chlorophyll *a* will be considered for adoption~~. After ~~May~~ December 31, ~~2017~~2022, total nitrogen will be considered for adoption per the circumstances outlined in 31.17(~~e~~g) and (h).

Prior to ~~May~~ December 31, ~~2022~~2027, nutrient criteria will be adopted for headwaters on a segment by segment basis for the South Platte River Basin. Moreover, pursuant to 31.17(e), nutrient standards will only be adopted for waters upstream of all permitted domestic wastewater treatment facilities discharging prior to May 31, 2012 or with preliminary effluent limits requested prior to May 31, 2012, and any non-domestic facilities subject to Regulation 85 effluent limits and discharging prior to May 31, 2012. The following is a list of all permitted domestic wastewater treatment facilities discharging prior to May 31, 2012 or with preliminary effluent limits requested prior to May 31, 2012, and any non-domestic facilities subject to Regulation 85 effluent limits and discharging prior to May 31, 2012 in the South Platte River Basin:

Segment	Permittee	Facility name	Permit No.
COSPUS01a	Alma Town of	Alma, Town of	CO0035769
COSPUS01a	Fairplay Sanitation District	Fairplay Sanitation District WWTF	CO0040088
COSPUS01a	Boy Scouts of America Pikes Peak Council	Camp Alexander	COG588036
COSPUS02a	Florissant Water and San Dist	Florissant Water and San Dist	CO0041416
COSPUS02a	Teller County	Teller County WW Utility Board	CO0044211
COSPUS03	Woodland Park City of	Woodland Park, City of	CO0043214
COSPUS03	YMCA Camp Shady Brook	Camp Shady Brook	CO0045993
COSPUS03	Lost Valley Ranch Corporation	Lost Valley Ranch	COG588122
COSPUS04	Will-O-Wisp Metro District	Will-O-Wisp Metro District	CO0041521
COSPUS04	Bailey WSD	Bailey WSD WWTF	COG588056
COSPUS04	Platte Canyon School Dist 1	Platte Canyon School Dist 1	COG588114
COSPUS05c	Mountain Water and Sanitation District	Mountain Water&Sanitation District	CO0022730
COSPUS06a	Roxborough Water and Sanitation District	Roxborough Park Water&San WWTF	CO0041645
COSPUS10a	Plum Creek Water Reclamation Authority	Plum Creek WW Authority WWTF	CO0038547
COSPUS10a	Perry Park Water and Sanitation District	Sageport WWTF	CO0043044
COSPUS11b	Perry Park Water and Sanitation District	Waucondah WWTP	CO0022551
COSPUS14	Littleton/Englewood Cities of	Littleton/Englewood, Cities of	CO0032999
COSPUS15	Metro Waste Water Reclamation District	Metro Wastewater Reclamation District	CO0026638
COSPUS15	Brighton City of	Brighton WWTF	CO0021547
COSPUS15	South Adams County WSD	Williams Monoco WWTF	CO0026662
COSPUS15	Metro Waste Water Reclamation District	Northern Treatment Plant	CO0048959
COSPUS16c	Ascentia Real Estate Holding Company LLC	Foxridge Farms MH Community	CO0028908
COSPUS16c	SouthWest Water Company	Hi-Land Acres W&SD WWTF	COG589072
COSPUS16c	Mile High Racing and Enter dba Arapahoe Park	Arapahoe Park Racetrack	COG589073
COSPUS16c	Rangeview Metro District	Coal Creek WW Reclamation Fac	COG589108
COSPUS16g	Centennial Water and San Dist	Marcy Gulch WWTF	CO0037966
COSPUS16i	Aurora City of - Aurora Water	Sand Creek Water Reuse Facility	CO0026611
COSPCH01	Stonegate Village Metropolitan District	Stonegate Village WWTF	CO0040291
COSPCH01	Pinery Water and Wastewater District	Pinery WWTF	CO0041092
COSPCH01	Parker Water and Sanitation District	Parker North WRF	CO0046507
COSPCH04	Arapahoe County W and WW Authority	Lone Tree Creek WWTP	CO0040681
COSPBE01a	Amen Real Estate LLC	Singin' River Ranch WWTF	CO0035971
COSPBE01b	Morrison Town of	Morrison Town of	CO0041432
COSPBE01e	Kittredge Sanitation and Water District	Kittredge San & Water District	CO0023841
COSPBE01e	Bruce & Jayne Hungate DBA Bear Creek	Bear Creek Cabins	CO0030856

Segment	Permittee	Facility name	Permit No.
	Cabins		
COSPBE01e	Evergreen Metropolitan District	Evergreen Metropolitan Dist WWTF	CO0031429
COSPBE04a	Genesee WSD	Genesee Water & San District	CO0022951
COSPBE04a	Forest Hills Metro District	Forest Hills Metropolitan Dist	CO0037044
COSPBE05	West Jefferson County MD	W. Jefferson County Metro Dist	CO0020915
COSPBE05	Historic Brook Forest Inn LLC	Brook Forest Inn	CO0030261
COSPBE06a	Tiny Town Foundation Inc	Tiny Town	CO0036129
COSPBE06a	Aspen Park Metropolitan District	Aspen Park Metropolitan District	CO0000001
COSPBE06b	Jefferson County Public Schools R-1	Conifer High School WW Rec Plt	CO0047988
COSPCL01	Colorado Dept of Transportation	Eisenhower/Johnson Memorial Tunnels	CO0026069
COSPCL01	Clear Creek Skiing Corp	Loveland Ski Area WWTF	CO0040835
COSPCL02a	Georgetown Town of	Georgetown WWTF	CO0027961
COSPCL02c	Central Clear Creek SD	Central Clear Creek SD WWTF	COG588055
COSPCL05	Empire Town of	Empire Town of	COG588065
COSPCL09a	St Marys Glacier WSD	St Mary's Glacier WSD	CO0023094
COSPCL10	Shwayder Camp Wastewater	Shwayder Camp WWTF	CO0047473
COSPCL11	Idaho Springs City of	Idaho Springs WWTF	CO0041068
COSPCL12b	Clear Creek WWTP	Clear Creek WWTP	CO0046574
COSPCL13b	Black Hawk/Central City Sanitation District	Black Hawk/Central City SD WWTF	CO0046761
COSPCL14a	MillerCoors LLC	MillerCoors Golden Facility	CO0001163
COSPBD01	Westminster City of	Big Dry Creek WWTF	CO0024171
COSPBD01	Broomfield City and County	Broomfield WWTF	CO0026409
COSPBD01	Northglenn City of	Northglenn WWTF	CO0036757
COSPBO02b	San Lazaro Park Properties LLP c/o	San Lazaro MHP WWTF	CO0020184
COSPBO02b	BaseCamp Ventures LLC	Boulder Mountain Lodge WWTF	CO0040819
COSPBO02b	Mueller Red Lion Inn	Red Lion Inn WWTF	COG588118
COSPBO03	Nederland Town of	Nederland Town of WWTF	CO0020222
COSPBO04b	Eldorado Springs Wastewater	Eldorado Springs WWTF	CO0047651
COSPBO04b	San Souci MHP	San Souci MHP	COG588101
COSPBO07b	Louisville City of	Louisville WWTF	CO0023078
COSPBO07b	Lafayette City of	Lafayette WWTF	CO0023124
COSPBO07b	Erie Town of	Erie WWTF	CO0045926
COSPBO08	Superior Metropolitan District No 1	Superior Metropolitan Dist No1	CO0043010
COSPBO09	Boulder City of	75TH ST WWTP	CO0024147
COSPBO10	Erie Town of	Erie North Water Reclamation Facility	CO0048445
COSPBO10	B & B Mobile Home and RV Park	B & B Mobile Home & RV Park	COG588107
COSPBO14	Lake Eldora WSD	Lake Eldora WSD WWTF	CO0020010
COSPSV02a	Peaceful Valley Ranch LLC	Peaceful Valley Ranch WWTF	CO0048828
COSPSV02a	Seventh-Day Adventist Assoc of Colorado	Glacier View Ranch	CO0030112
COSPSV02a	Aspen Lodge at Estes Park Corp	Aspen Lodge at Estes Park Corp	CO0042820
COSPSV02b	Lyons Town of	Lyons Town of	CO0020877
COSPSV03	Longmont City of	Longmont WWTF	CO0026671
COSPSV03	St Vrain Sanitation District	St Vrain Sanitation District	CO0041700
COSPSV06a	Fairways Metro Dist	Fairways WWTF	CO0048411
COSPSV06b	Niwot Sanitation District	Niwot Sanitation District	CO0021695

Segment	Permittee	Facility name	Permit No.
COSPSV06b	Mead Town of	Lake Thomas Subdivision WWTF	CO0046868
COSPSV06b	Mead Town of	Mead, Town of	CO0046876
COSPMS01a	Fort Lupton City of	Fort Lupton WWTF	CO0021440
COSPMS01b a	Platteville Town of	Platteville WWTF	CO0040355
COSPMS01b	Evans City of	Evans City of WWTF	CO0020508
COSPMS01b	Kersey Town of	Kersey WWTF	CO0021954
COSPMS01b	Evans City of	Hill-N-Park Sanitation Dist.	CO0047287
COSPMS01b	La Salle Town of	La Salle Town of	COG588058
COSPMS01b	Gilcrest Town of	Gilcrest WWTF	COG588121
COSPMS03a	Elizabeth Town of	Gold Creek	COG589037
COSPMS03a	Galeton Water and Sanitation District	Galeton Water & San District	CO0043320
COSPMS03a	Orica USA Inc	Orica USA, Inc.	CO0046221
COSPMS03a	Spring Valley Ranch	Spring Valley Ranch WWTF	CO0046965
COSPMS03a	Front Range Airport WWTF	Front Range Airport WWTF	CO0047741
COSPMS04	Lochbuie Town of	Lochbuie Town of	CO0047198
COSPMS05a	Swift Beef Company	Swift Beef – Lone Tree	CO0027707
COSPMS05c	Hudson WWTF	Hudson Mechanical WWTF	COG589104
COSPMS06	Keenesburg Town of	Keenesburg Town of	CO0041254
COSPMS06	Bennett Town of	Bennett Town of	COG589069
COSPBT02	Estes Park Sanitation District	Estes Park Sanitation District	CO0020290
COSPBT02	Upper Thompson Sanitation District	UTSD WWTF	CO0031844
COSPBT04c	Loveland City of	Loveland WWTP	CO0026701
COSPBT05	Milliken Town of	Milliken Sanitation District	CO0042528
COSPBT05	Johnstown Town of	Low Point WWTP	CO0047058
COSPBT07	Hidden View Estates HOA	Hidden View Estates HOA WWTF	CO0048861
COSPBT09	Johnstown Town of	Johnstown Central WWTF	CO0021156
COSPBT09	Riverglen Homeowners Assoc	Riverglen HOA WWTF	CO0029742
COSPBT09	Berthoud Town of	Berthoud Town of	CO0046663
COSPBT10	Berthoud Town of	Serenity Ridge WWTF	CO0047007
COSPBT10	Western Mini-Ranch/Vaquero Estates Sewer Assoc.	Western Mini-Ranch/Vaquero Est	COG589095
COSPBT10	Berthoud Estates Community Assoc	Berthoud Estates WWTF	COG589097
COSPCP08	Fox Acres Community Services Corp	Fox Acres WWTF	COG589112
COSPCP08	Girl Scouts of Colorado	Magic Sky Ranch G.S. Camp	CO0047317
COSPCP11	Fort Collins City of	Mulberry WWTP	CO0026425
COSPCP11	Fort Collins City of	Drake WWTP	CO0047627
COSPCP12a	Windsor, Town of	Windsor Town of WWTF	CO0020320
COSPCP12b	Greeley City of	Greeley City of	CO0040258
COSPCP12b	Leprino Foods Company	Leprino Greeley Facility WWTF	CO0048860
COSPCP13a	Anheuser Busch Inc	Nutri-Turf, Inc.	CO0039977
COSPCP13a	Eaton Town of	Eaton, Town of	CO0047414
COSPCP13a	Saddler Ridge Metro Dist Water Reclamation Facility	Saddler Ridge Metro Dist Water Reclamation Facility	COG589107
COSPCP13b c	Boxelder Sanitation District	Boxelder Sanitation District WWTF	CO0020478
COSPCP13b c	Wellington Town of	Wellington WWTF	CO0046451

Segment	Permittee	Facility name	Permit No.
COSPCP22	South Fort Collins Sanitation District	South Fort Collins San Dist	CO0020737
COSPLS01a	Western Sugar Cooperative	Fort Morgan Facility	CO0041351
COSPLS01a	Cargill Meat Solutions	Fort Morgan Beef Plant	CO0044270
COSPLS01a	Brush City of	Brush City of	CO0021245
COSPLS01a	Fort Morgan City of	Fort Morgan City of	CO0044849
COSPLS01a	Snyder Sanitation District	Snyder Sanitation District	COG588016
COSPLS01a	Morgan Heights WSD	Morgan Heights Water & Sewer Inc.	COG588040
COSPLS01b	Julesburg Town of	Julesburg Town of	CO0021113
COSPLS01b	Sterling City of	Sterling City of	CO0026247
COSPLS01b	Ovid Town of	Ovid Town of	COG588106
COSPLS02~~a~~	Leprino Foods Company	Fort Morgan Cheese Facility	CO0043958
COSPLS02~~a~~	Deer Trail Town of	Deer Trail WWTF	COG589002
COSPLS02~~a~~	Hillrose Town of	Hillrose WWTF	COG589030
COSPLS02~~a~~	Byers Water and Sanitation District	Byers Water and Sanitation District	COG589033
COSPLS02~~a~~	Eastern Adams County Metro District	Eastern Adams CO Metro Dist WWTF	COG589035
COSPLS02~~b~~	Kiowa Town of	Kiowa WWTF	CO0033405
COSPLS02~~b~~	Elbert Water Sanitation District	Elbert Water Sanitation District WWTF	COG589065
COSPRE03	Wray City of	Wray City of	CO0023833
COSPRE06	Flagler Town of	Flagler WWTF	COG589036
COSPRE06	Arriba Town of	Arriba WWTF	COG589055
COSPRE06	Holyoke City of	Holyoke, City of	COG589059
COSPRE06	Akron Town of	Akron WWTF	COG589061
COSPRE06	Haxtun Town of	Haxtun. Town of	COG589062
COSPRE06	Stratton Town of	Stratton WWTF	COG589100
COSPRE06	Burlington City of	Burlington City of WWTF	COG589114
COSPRE06	Seibert Town of	Seibert WWTF	COG589120
COSPRE07	Cheyenne Wells Sanitation District No 1	Cheyenne Wells Sanitation District	COG589039
Unclassified	Silco Oil Co	Tomahawk Truck Stop	COG589003

Prior to ~~May~~ December 31, ~~2022~~2027:

- For segments located entirely above these facilities, nutrient standards apply to the entire segment.
- For segments with portions downstream of these facilities, nutrient standards only apply above these facilities. A ~~foot~~note was added to the total phosphorus and chlorophyll *a* standards in these segments. The ~~foot~~note references the table of qualified facilities at 38.5(4).
- For segments located entirely below these facilities, nutrient standards do not apply.

A ~~foot~~note was added to the total phosphorus and chlorophyll *a* standards in lakes segments as nutrients standards apply only to lakes and reservoirs larger than 25 acres surface area.

38.6 TABLES

(1) Introduction

The numeric standards for various parameters in this regulation and in the tables in Appendix 38-1 were assigned by the Commission after a careful analysis of the data presented on actual stream conditions and on actual and potential water uses.

Numeric standards are not assigned for all parameters listed in the Tables attached to 31.~~0~~16. If additional numeric standards are found to be needed during future periodic reviews, they can be assigned by following the proper hearing procedures.

(2) Abbreviations~~:~~

(a) The following abbreviations are used in this regulation and in the tables in Appendix 38-1:

ac	=	acute (1-day)
°C	=	degrees celsius
ch	=	chronic (30-day)
CL	=	cold lake temperature tier
CLL	=	cold large lake temperature tier
CS-I	=	cold stream temperature tier one
CS-II	=	cold stream temperature tier two
DM	=	daily maximum temperature
D.O.	=	~~D~~dissolved oxygen
DUWS	=	direct use water supply
E. coli	=	*Escherichia coli*
mg/L~~l~~	=	milligrams per liter
MWAT	=	maximum weekly average temperature
OW	=	outstanding waters
sp	=	~~S~~spawning
SSE	=	site-specific equation
T	=	total recoverable
t	=	total
tr	=	trout
Trec	=	total recoverable
TVS	=	table value standard
µg/L~~l~~	=	micrograms per liter
UP	=	use-protected
~~WAT~~	~~=~~	~~weekly average temperature~~
WL	=	warm lake temperature tier
WS	=	water supply
WS-I	=	warm stream temperature tier one
WS-II	=	warm stream temperature tier two
WS-III	=	warm stream temperature tier three

(b) In addition, the following abbreviations are used:

~~Fe(ch)~~Iron	=	WS
~~Mn(ch)~~Manganese	=	WS
~~SO4~~Sulfate	=	WS

These abbreviations mean: For all surface waters with an actual water supply use, the less restrictive of the following two options shall apply as numerical chronic standards, as specified in the Basic Standards and Methodologies at 31.11(6);

(i) existing quality as of January 1, 2000; or

(ii)

Iron	=	300 µg/L (dissolved)
Manganese	=	50 µg/L (dissolved)
~~SO_4~~Sulfate	=	250 mg/L

For all surface waters with a "Wwater Ssupply" classification that are not in actual use as a water supply, no Wwater Ssupply standards are applied for iron, manganese or sulfate, unless the Commission determines as the result of a site-specific rulemaking hearing that such standards are appropriate.

(c) Temporary Modification for Water + Fish Chronic Arsenic Standard

(i) The temporary modification for chronic arsenic standards applied to segments with an arsenic standard of 0.02 µg/L that has been set to protect the Water+Fish qualifier is listed in the temporary modification and qualifiers column as As(ch)=hybrid.

(ii) For discharges existing on or before 6/1/2013, the temporary modification is: As(ch)=current condition, expiring on 12/31/2024. Where a permit for an existing discharge is reissued or modified while the temporary modification is in effect, the division will include additional permit Terms and Conditions, which may include requirements for additional monitoring, source identification, and characterization of source control and treatment options for reducing arsenic concentrations in effluent.

(iii) For new or increased discharges commencing on or after 6/1/2013, the temporary modification is: As(ch)=0.02-3.0 µg/L (Trec), expiring on 12/31/2024.

(a) The first number in the range is the health-based water quality standard previously adopted by the Commission for the segment.

(b) The second number in the range is a technology--based value established by the Commission for the purpose of this temporary modification.

(c) Control requirements, such as discharge permit effluent limitations, shall be established using the first number in the range as the ambient water quality target, provided that no effluent limitation shall require an "end-of-pipe" discharge level more restrictive than the second number in the range.

(3) Table Value Standards

In certain instances in the tables in Appendix 38-1, the designation "TVS" is used to indicate that for a particular parameter a "table value standard" has been adopted. This designation refers to numerical criteria set forth in the Basic Standards and Methodologies for Surface Water. The criteria for which the TVS are applicable are on the following table.

TABLE VALUE STANDARDS
(Concentrations in µg/L unless noted)

<table>
<tr><th>PARAMETER(1)</th><th>TABLE VALUE STANDARDS (2)(3)</th></tr>
<tr><td>Aluminum (Trec)</td><td>Acute = e(1.3695[ln(hardness)]+1.8308)
pH equal to or greater than 7.0
Chronic=e(1.3695[ln(hardness)]-0.1158)
pH less than 7.0
Chronic= e(1.3695[ln(hardness)]-0.1158) or 87, whichever is more stringent</td></tr>
<tr><td>Ammonia(4)</td><td>Cold Water = (mg/L as N)Total
$acute = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$
$chronic = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * MIN\left(2.85,\ 1.45*10^{0.028(25-T)}\right)$</td></tr>
<tr><td></td><td>Warm Water = (mg/L as N)Total
$acute = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$</td></tr>
<tr><td></td><td>$chronic\ \ (Apr\,1-Aug\,31) = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * MIN\left(2.85,\ 1.45*10^{0.028(25-T)}\right)$
$chronic\ (Sep\,1-Mar\,31) = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * 1.45*10^{0.028*(25-MAX(T,\ 7))}$</td></tr>
<tr><td>Cadmium</td><td>Acute(warm)(5) = (1.136672-(ln(hardness)* 0.041838))*e(0.9789*ln(hardness)-3.443)
Acute(cold)(5) = (1.136672-(ln(hardness)* 0.041838))*e(0.9789*ln(hardness)-3.866)
Chronic = (1.101672-(ln(hardness)*0.041838))* e(0.7977*ln(hardness)-3.909)</td></tr>
<tr><td>Chromium III(6)</td><td>Acute = e(0.819[ln(hardness)]+2.5736)
Chronic = e(0.819[ln(hardness)]+0.5340)</td></tr>
<tr><td>Chromium VI(6)</td><td>Acute = 16
Chronic = 11</td></tr>
<tr><td>Copper</td><td>Acute = e(0.9422[ln(hardness)]-1.7408)
Chronic = e(0.8545[ln(hardness)]-1.7428)</td></tr>
<tr><td>Lead</td><td>Acute = (1.46203-[ln(hardness)*(0.145712)])*e(1.273[ln(hardness)]-1.46)
Chronic = (1.46203-[(ln hardness)* (0.145712)])*e(1.273[ln(hardness)]-4.705)</td></tr>
<tr><td>Manganese</td><td>Acute = e(0.3331[ln(hardness)]+6.4676)
Chronic = e(0.3331[ln(hardness)]+5.8743)</td></tr>
<tr><td>Nickel</td><td>Acute = e(0.846[ln(hardness)]+2.253)
Chronic = e(0.846[ln(hardness)]+0.0554)</td></tr>
<tr><td>Selenium(7)</td><td>Acute = 18.4
Chronic = 4.6</td></tr>
<tr><td>Silver</td><td>Acute = ½ e(1.72[ln(hardness)]-6.52)
Chronic = e(1.72[ln(hardness)]-9.06)
Chronic(Trout) = e(1.72[ln(hardness)]-10.51)</td></tr>
<tr><td>Temperature</td><td colspan="5">
<table>
<tr><th>TEMPERATURE TIER</th><th>TIER CODE</th><th>SPECIES EXPECTED TO BE PRESENT</th><th>APPLICABLE MONTHS</th><th colspan="2">TEMPERATURE STANDARD (°C)</th></tr>
<tr><th></th><th></th><th></th><th></th><th>(MWAT)</th><th>(DM)</th></tr>
<tr><td rowspan="2">Cold Stream Tier I(8)</td><td rowspan="2">CS-I</td><td rowspan="2">brook trout, cutthroat trout</td><td>June – Sept.</td><td>17.0</td><td>21.7</td></tr>
<tr><td>Oct. - May</td><td>9.0</td><td>13.0</td></tr>
<tr><td rowspan="2">Cold Stream Tier II(8)</td><td rowspan="2">CS-II</td><td rowspan="2">all other cold-water species</td><td>April – Oct.</td><td>18.3</td><td>~~23.9~~24.3</td></tr>
<tr><td>Nov. - March</td><td>9.0</td><td>13.0</td></tr>
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PARAMETER[1]	TABLE VALUE STANDARDS [2][3]					
	Cold Lake[9]	CL	brook trout, brown trout, cutthroat trout, lake trout, rainbow trout, Arctic grayling, sockeye salmon	April – Dec.	17.0	21.2
				Jan. - March	9.0	13.0
	Cold Large Lake (>100 acres surface area)[9]	CLL	brown trout, lake trout, rainbow trout	April – Dec.	18.3	~~23.8~~24.2
				Jan. - March	9.0	13.0
	Warm Stream Tier I	WS-I	common shiner, Johnny darter, orangethroat darter, stonecat	March – Nov.	24.2	29.0
				Dec. – Feb.	12.1	~~14.5~~24.6
	Warm Stream Tier II	WS-II	brook stickleback, central stoneroller, creek chub, longnose dace, ~~N~~northern redbelly dace, finescale dace, razorback sucker, white sucker, mountain sucker	March – Nov.	27.5	28.6
				Dec. – Feb.	13.8	~~14.3~~25.2
	Warm Stream Tier III	WS-III	all other warm-water species	March – Nov.	28.7	31.8
				Dec. – Feb.	14.3	~~15.9~~24.9
	Warm Lakes	WL	~~Y~~yellow perch, walleye, pumpkinseed, smallmouth bass, striped bass, white bass, largemouth bass, bluegill, spottail shiner, stonecat, ~~N~~northern pike, tiger muskellunge, black crappie, common carp, gizzard shad, sauger, white crappie, wiper	April – Dec.	26.~~3~~2	29.~~5~~3
				Jan. - March	13.~~2~~1	~~14.8~~24.1
Uranium	Acute = $e^{(1.1021[\ln(\text{hardness})]+2.7088)}$ Chronic = $e^{(1.1021[\ln(\text{hardness})]+2.2382)}$					
Zinc	Acute = $0.978*e^{(0.9094[\ln(\text{hardness})]+0.9095)}$ Chronic = $0.986*e^{(0.9094[\ln(\text{hardness})]+0.6235)}$					

TABLE VALUE STANDARDS - FOOTNOTES

(1) Metals are stated as dissolved unless otherwise specified.

(2) Hardness values to be used in equations are in mg/~~l~~L as calcium carbonate and shall be no greater than 400 mg/L except for aluminum for which hardness shall be no greater than 220 mg/L. The hardness values used in calculating the appropriate metal standard should be based on the lower 95 per cent confidence limit of the mean hardness value at the periodic low flow criteria as determined from a regression analysis of site-specific data. Where insufficient site-specific data exists to define the mean hardness value at the periodic low flow criteria, representative regional data shall be used to perform the regression analysis. Where a regression analysis is not appropriate, a site-specific method should be used. In calculating a hardness value, regression analyses should not be extrapolated past the point that data exist.

(3) Both acute and chronic numbers adopted as stream standards are levels not to be exceeded more than once every three years on the average.

(4) For acute conditions the default assumption is that salmonids could be present in cold water segments and should be protected, and that salmonids do not need to be protected in warm water segments. For chronic conditions, the default assumptions are that early life stages could be present all year in cold water segments and should be protected. In warm water segments the default assumption is that early life stages are present and should be protected only from April 1 through August 31. These assumptions can be modified by the Commission on a site-specific basis where appropriate evidence is submitted.

(5) The acute(warm) cadmium equation applies to segments classified as Aquatic Life Warm Class 1 or 2. The acute(cold) cadmium equation applies to segments classified as Aquatic Life Cold Class 1 or 2.

(6) Unless the stability of the chromium valence state in receiving waters can be clearly demonstrated, the standard for chromium should be in terms of chromium VI. In no case can the sum of the instream levels of Hexavalent and Trivalent Chromium exceed the Www~~~~ater Sss~~upply standard of 50 µg/L~~l~~ total chromium in those waters classified for domestic water use.

(7) Selenium is a bioaccumulative metal and subject to a range of toxicity values depending upon numerous site-specific variables.

(8) Mountain whitefish-based summer temperature criteria [16.9 (ch), 21.2 (ac)] apply when and where spawning and sensitive early life stages of this species are known to occur.

(9) Lake trout-based summer temperature criteria [16.6 (ch), 22.4 (ac)] apply where appropriate and necessary to protect lake trout from thermal impacts.

~~(8) E.coli criteria and resulting standards for individual water segments, are established as indicators of the potential presence of pathogenic organisms. Standards for E. coli are expressed as a two-month geometric mean. Site-specific or seasonal standards are also two-month geometric means unless otherwise specified.~~

~~(9) All phosphorus standards are based upon the concentration of total phosphorus.~~

~~(10) The pH standards of 6.5 (or 5.0) and 9.0 are an instantaneous minimum and maximum, respectively to be applied as effluent limits. In determining instream attainment of water quality standards for pH, appropriate averaging periods may be applied, provided that beneficial uses will be fully protected.~~

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(4) Site-specific Standards, Assessment Locations, and Assessment Criteria

~~The following criteria shall be used when assessing whether a specified waterbody is in attainment of the specified standard.~~

(a) Upper South Platte Segment 6b, Chatfield Reservoir: Chlorophyll *a* Assessment Thresholds

chlorophyll *a*= 11.2 µg/L~~l~~, summer average, 1 in 5 year allowable exceedance frequency
phosphorus(Tot) = 0.035 mg/L~~l~~, summer average, 1 in 5 year allowable exceedance frequency.

(b) Upper South Platte Segment 16h: Selenium Standards and Assessment Locations

Selenium Standards (µg/L):

West Toll Gate Creek: Selenium(chronic)=50.6, Selenium(acute)=119.2
East Toll Gate Creek: Selenium(chronic)=14.3, Selenium(acute)=15.9
Toll Gate Creek: Selenium(chronic)=26.5, Selenium(acute)=29.5

Selenium Assessment Locations:

- Toll Gate Creek (TG6): Downstream of the confluence of East and West Toll Gate Creeks, at 6th Avenue near the gage station.
- East Toll Gate Creek (ET1): Upstream of the confluence with West Toll Gate Creek, at Chambers Road and 1st Avenue.

- West Toll Gate Creek (WT1): Upstream of the confluence with East Toll Gate Creek, at 2nd Avenue.

(c) Upper South Platte Segment 15 and Middle South Platte Segment 1a: Dissolved Oxygen and Ammonia Standards

Dissolved Oxygen Standards:

Early Life Stage Protection Period (April 1 through July 31)

1-Day[1,2,3]	3.0 mg/L (acute)
7-Day Average[1,4,5]	5.0 mg/L

Older Life Stage Protection Period (August 1 through March 31)

1-Day[1,2]	2.0 mg/L (acute)
7-Day Mean of Minimums[1,6]	2.5 mg/L
30-Day Average[1,4]	4.5 mg/L

Dissolved Oxygen Footnotes

1. For the purposes of determining ~~compliance with~~attainment of the standards, dissolved oxygen measurements shall only be taken in the flowing portion of the stream and at mid-depth, ~~and~~ at least six inches above the bottom of the channel. Dissolved oxygen measurements in man-made pools are not to be used for determination of attainment of the standards. All sampling protocols and test procedures shall be in accordance with procedures and protocols approved by the division.

2. During a 24-hour day dissolved oxygen levels are likely to be lower during the nighttime when there is no photosynthesis. The dissolved oxygen levels should not drop below the acute standard (ELS acute standard of 3.0 mg/L or the Older Life Stage (OLS) standards of 2.0 mg/L). However, if during the Early Life Stage (ELS) period multiple measurements are below 3.0 mg/L during the same nighttime period, the multiple measurements shall be considered a single exceedance of the acute standard. For measurements below 2.0 mg/L during either the ELS or the OLS periods, each hourly measurement below 2.0 mg/L shall be considered an exceedance of the acute standards.

3. In July, the dissolved oxygen level may be lower than the 3.0 mg/L acute standard for up to 14 exceedances in any one year and up to a total of 21 exceedances in three years before there is a determination that the acute dissolved oxygen standards is not being met. Exceedances shall be counted as described in Footnote 2.

4. A minimum of four independent daily means must be used to calculate the average for the 7-day average standard. A minimum of eight independent daily means must be used to calculate the average for the 30-day average standard. The four days and the eight days must be representative of the 7-day and the 30-day periods respectively. The daily means shall be the mean of the daily high and low values. In calculating the mean values, the dissolved oxygen saturation value shall be used in place of any dissolved oxygen measurements which exceed saturation.

5 For Upper South Platte Segment 15, north of the Lupton Bottoms Ditch diversion, the ELS 7-day average standards for the period July 1 – June 31 shall be 4.6 mg/L.

6. The 7-day mean minimum is the average of the daily minimums measured at the location on each day during any 7-day period.

Ammonia Standards:

Early Life Stage Protection Period (April 1 through July 31)

Ammonia Warm Water = mg/L as N (Total)

Acute = TVS
Chronic =

$$chronic\ \ (Apr\,1-July\,31)=\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)*MIN\left(2.85,\ 1.45*10^{0.028(25-T)}\right)$$

$$chronic\ (Aug\,1-Mar\,31)=\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)*1.45*10^{0.028*(25-MAX(T,\ 7))}$$

~~Ammonia~~ ~~Warm Water = (mg/l as N)Total~~

~~$$acute=\frac{0.411}{1+10^{7.204-pH}}+\frac{58.4}{1+10^{pH-7.204}}$$~~

~~$$chronic\ \ (Apr\,1-July\,31)=\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)*MIN\left(2.85,\ 1.45*10^{0.028(25-T)}\right)$$~~

~~$$chronic\ (Aug\,1-Mar\,31)=\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)*1.45*10^{0.028*(25-MAX(T,\ 7))}$$~~

~~NH_3 = old TVS~~ ~~Warm Water Acute = 0.62/FT/FPH/2~~[(4 old)] ~~in mg/ (N)~~

~~Upper South Platte Segment 15 and Middle South Platte Segment 1a: Dissolved Oxygen Assessment Locations~~

~~For the purpose of determining attainment of the standard, dissolved oxygen measurements shall only be taken in the flowing portion of the stream and at mid depth, and at least six inches above the bottom of the channel. Dissolved oxygen measurements in man-made pools are not to be used for determination of attainment of the standards.~~

(d) Big Dry Creek Segment 1: Selenium Assessment Locations

- bdc 1.5: Upstream of Broomfield Wastewater Treatment Plant
- bdc 2.0: Upstream of Westminster Big Dry Creek Wastewater Treatment Facility
- bdc 4.5: Upstream of Northglenn Wastewater Treatment Plant

(e) Big Dry Creek Segment 2 (Standley Lake): Chlorophyll *a* Assessment Thresholds

Chlorophyll *a* = 4.4 µg/L, Mar-Nov average, 1 in 5 yr allowable exceedance frequency

(f) Upper South Platte Segment 16i, Sand Creek from Toll Gate Creek to the confluence with the South Platte River: assessment locations for selenium and total mercury.

Selenium Standards (µg/L):

Upper: Selenium(chronic)=38.2, Selenium(acute)=45.1
Lower: Selenium(chronic)=9.0, Selenium(acute)=TVS

Selenium Assessment Locations:

- Upper – (SWA): Downstream of the confluence of Sand Creek and Toll Gate Creek approximately 250 meters upstream of the Sand Creek Water Reuse Facility (SCWRF) discharge near the Peoria Street Bridge.

- Lower – (SW1): Above Suncor, approximately 60 meters upstream of the Union Pacific Railroad crossing and upstream of Brighton Boulevard.

Mercury Assessment Locations and Method:

- Sand Creek (SWP) – Downstream of the sheet piling drop structure located near the Brighton Blvd. Bridge.

- Sand Creek (SWP2-1) – Approximately 600 feet downstream of Suncor Outfall 003 and immediately upstream of the Burlington Ditch Siphon.

- Attainment of the standard below Brighton Blvd. shall be assessed using the weighted 85th percentile total mercury concentration from both assessment locations.

(g) Upper South Platte Segment 16g (Marcy Gulch): Selenium assessment.

Determination of attainment of the chronic and acute selenium standards will be based on the 85th and 95th percentile, respectively, of paired samples taken the same day from from the two following locations:

- L29: Marcy Gulch upstream of Santa Fe Drive, immediately upstream of the Centennial Water & Sanitation District WWTF

- L36: Marcy Gulch upstream of the confluence with the South Platte River.

(h) Upper South Platte Segment 16j: Selenium standards (µg/L) and assessment.

Lee Gulch: Selenium(chronic)=10, Selenium(acute)=TVS

Little's Creek: Selenium(chronic)=6, Selenium(acute)= TVS

Big Dry Creek: Selenium(chronic)=23, Selenium(acute)=26

Little Dry Creek: Selenium(chronic)=11, Selenium(acute)=TVS

Determination of attainment of the chronic and acute selenium standards will be based on the 85th and 95th percentile, respectively. The selenium assessment locations are:

- Lee Gulch: Upstream of the confluence with the South Platte River

- Little's Creek: Upstream of the confluence with the South Platte River
- Big Dry Creek: Upstream of the confluence with the South Platte River
- Little Dry Creek: Upstream of the confluence with the South Platte River

(i) Cherry Creek Segment 4b: Selenium standards (µg/L) and assessment

Upper Cottonwood Creek:
October–February Selenium(acute/chronic)=TVS/14.0
March–September Selenium(acute/chronic)=TVS/7.1

Lower Cottonwood Creek:
October–February Selenium(acute/chronic)=TVS/5.1
March–September Selenium(acute/chronic)=TVS

Break between Upper and Lower Cottonwood Creek is at the confluence with Lone Tree Creek.

Upper Lone Tree Creek:
October–February Selenium(acute/chronic)=41.0/37.2
March–September Selenium(acute/chronic)=19.3/19.0

Lower Lone Tree Creek: Selenium(acute/chronic)=TVS

Break between Upper and Lower Lone Tree Creek is at the ACCWA Lone Tree Facility Outfall.

Upper Windmill Creek: Selenium(acute/chronic)=TVS

Middle Windmill Creek:
October–February Selenium(acute/chronic)=TVS/15.1
March–September Selenium(acute/chronic)=TVS/8.4

Lower Windmill Creek: Selenium(acute/chronic)=TVS

Break between Upper, Middle and Lower Windmill Creek is at the assessment locations.

Determination of attainment of the chronic and acute selenium standards will be based on the 85th and 95th percentile, respectively.

- Upper Cottonwood Creek: From headwaters to confluence with Lone Tree Creek, to be assessed at CT-P2 — 39.605694, -104.84825. At Peoria St.
- Lower Cottonwood Creek: From confluence with Lone Tree Creek to terminus at Cherry Creek Reservoir, to be assessed at CT2-39.627861, -104.85025. West of Perimeter Road and south of bike path.
- Upper Lone Tree Creek: From headwaters to just above site LTC-3, to be assessed using data from LTC-1 and LTC-2
  LTC-1 — 39.58435, -104.838017. Approximately 0.15 miles N of S. Revere Pkwy.
  LTC-2 — 39.59685, -104.838217. Approximately 10 yards N of E. Peakview Ave.

- Lower Lone Tree Creek: From site LTC-3 to confluence with Cottonwood Creek, to be assessed using data from LTC-3 and LTC-4
  LTC-3 — 39.604817, - 104.837083. Below ACWWA Lone Tree facility outfall.
  LTC-4 — 39.614483, 104.840217. Downstream of confluence with Windmill Creek

- Upper Windmill Creek: From Headwaters to WC-1 — Site WC-1-39.574967, -104.830017. West of Potomac St and South of Broncos Pkwy.

- Middle Windmill Creek: All sites between (but not including) WC-1 and WC-2.
  WC-1—39.574967, -104.830017. West of Potomac St and South of Broncos Pkwy.
  WC-2—39.59655, -104.821767. North of Cherry Creek Trail.

- Lower Windmill Creek: From site WC-2 to confluence with Lone Tree Creek, to be assessed at WC-2-39.59655, -104.821767. North of Cherry Creek Trail.

(j) Clear Creek Segment 5: Manganese assessment

- Below Woods Creek: West Fork of Clear Creek approximately 0.3 miles downstream of Berthoud Falls (39.771829°, -105.803418°).

- Mouth of West Fork: West Fork of Clear Creek near County Road 257.

(k) Big Dry Creek Segments 2, 3, 4a, 4b, 5a, and 5b: Ambient-based Site-specific Radionuclide Standards

The radionuclides listed in the table below shall be maintained at the lowest practical level and in no case shall they be increased by any cause attributable to municipal, industrial, or agricultural practices to exceed the site-specific numeric standards.

Parameter	**Segment 2 (Standley Lake)[1]**	**Segment 3 (Great Western Reservoir)[1]**	**Segments 4a, 4b, 5a, and 5b[1]**
Ambient-based site-specific standards			
Gross Alpha	6	5	NA
Gross Beta	9	12	NA
Plutonium	0.03	0.03	0.15[2,3]
Americium	0.03	0.03	0.15 [2,3]
Tritium	500	500	500
Uranium	3	4	16.8 µg/L
Other site-specific standards			
Curium	60	60	60
Neptunium	30	30	30

Radionuclides Footnotes:

1. Statewide standards also apply for radionuclides not listed above.

2. 0.15 pCi/L Statewide Basic Standards.

3. For plutonium and americium measurements in Segment 4a~~5~~ in Woman Creek and Segment 5 in Walnut Creek, attainment will be assessed based on the results of a 12-month flow-weighted rolling average concentration (computed monthly).

NA = No site-specific standard applies

(l) Upper South Platte Lakes Segment 19: Temperature Standards

Platte Canyon Reservoir:

DM and MWAT = CLL from 1/1 – 2/29
DM = CLL and MWAT = 25.0 from 3/1 – 12/31

Antero Reservoir:

DM and MWAT = CLL from 1/1 – 3/31
DM = CLL and MWAT = 19.6 from 4/1 – 12/31

Elevenmile Reservoir:

DM and MWAT = CLL from 1/1 – 3/31
DM = CLL and MWAT = 19.8 from 4/1 – 12/31

Spinney Mountain Reservoir:

DM and MWAT = CLL from 1/1 – 3/31
DM = CLL and MWAT = 20.2 from 4/1 – 12/31

Cheesman Reservoir:

DM and MWAT = CLL from 1/1 – 3/31
DM = CLL and MWAT = 21.9 from 4/1 – 12/31

Strontia Springs Reservoir:

DM and MWAT = CLL from 1/1 – 3/31
DM = CLL and MWAT = 22.6 from 4/1 – 12/31

Jefferson Lake:

DM and MWAT = CLL from 1/1 – 3/31
DM = 22.4 and MWAT = 16.6 from 4/1 – 12/31

All other locations DM and MWAT = CL, CLL year-round

(m) Cache la Poudre Segment 18: Temperature Standards

All locations DM and MWAT = CL,CLL from 1/1 – 3/31

Barnes Meadow Reservoir DM = CL and MWAT = 16.6 from 4/1 – 12/31

Chambers Lake DM = 22.4 and MWAT =16.6 from 4/1 – 12/31

All other locations DM and MWAT = CL,CLL from 4/1 – 12/31

(n) Lower South Platte Segment 3: Temperature Standards

All locations DM and MWAT = WL from 1/1 – 3/31

North Sterling Reservoir DM = WL and MWAT = 26.1 from 4/1 – 12/31

Jumbo Reservoir DM = WL and MWAT = 27 from 4/1 – 12/31

Jackson Reservoir DM = WL and MWAT = 28.1 from 4/1 – 12/31

All other locations DM and MWAT = WL from 4/1 – 12/31

(5) Stream Classifications and Water Quality Standards Tables

The stream classifications and water quality standards tables in Appendix 38-1 are incorporated herein by reference.

The following is information regarding duration and measured form of standards in Appendix 38-1:

(a) *E. coli* criteria and resulting standards for individual water segments, are established as indicators of the potential presence of pathogenic organisms. Standards for *E. coli* are expressed as a two-month geometric mean. Site-specific or seasonal standards are also two-month geometric means unless otherwise specified.

(b) All phosphorus standards are based upon the concentration of total phosphorus.

(c) The pH standards of 6.5 (or 5.0) and 9.0 are an instantaneous minimum and maximum, respectively to be applied as effluent limits. In determining instream attainment of water quality standards for pH, appropriate averaging periods may be applied, provided that beneficial uses will be fully protected.

(d) All mercury standards apply to the total recoverable fraction of all forms, both organic and inorganic, of mercury in water.

(e) All ammonia, nitrate, and nitrite standards are based upon the concentration reported as nitrogen.

(6) Discharger Specific Variances

(a) A Discharger Specific Variance (DSV) establishes a temporary water quality standard that represents the highest degree of protection of a classified use that is feasible within 20 years and is granted by the Commission pursuant to criteria contained in Regulation 31.7(4).

(i) In every case, the variance to the standard shall be temporary and must be re-examined not less than once every three years.

(ii) For DSVs that are longer than five years in duration, the Commission will submit the results of its re-evaluation to EPA within 30 days of the date the Commission completes its re-evaluation. Pursuant to 40 CFR 131.14(b)(1)(v)-(vi), the DSV will no longer be the applicable water quality standard for purposes of the Clean Water Act if the Commission does not conduct a re-evaluation consistent with the specified frequency or if the Commission does not submit the results within 30 days of completion of the re-evaluation process.

(b) The first number of the DSV is the underlying standard previously adopted by the Commission for the segment and represents the long-term goal for the waterbody. The first number will be used for assessing attainment for the waterbody and for the development of effluent limitations. The second number is the Commission's determination of the effluent concentration with the highest degree of protection of the classified use that is feasible for the discharger. Control requirements, such as discharge permit effluent limitations, shall be established using the first number as the ambient

water quality target, provided that no effluent limitation shall require an "end-of-pipe" discharge level more restrictive than the second number during the term of the DSV for the named discharger.

(c) Upper South Platte River Segments 15 and 16i:

Discharger Specific Variance, Suncor Energy (U.S.A.) Inc., Commerce City Refinery (CO0001147): Adopted 10/11/2016.

Selenium (acute) = TVS: no limit; Selenium (chronic) = 9: 24 µg/L. Expiration date: 12/31/2023.

38.7 COMMISSION'S DETERMINATION REGARDING STATE WATERS

(1) Introduction

The following list describes the Commission's determinations regarding water bodies that do not contain "State Waters."

(2) Determinations

(a) Marston Forebay located in Upper South Platte Segment 23 within Sections 11, 12, 13 and 14 in Township 5 South, Range 69 West of the 6th P.M. in the City and County of Denver, Colorado.

38.8 – 38.9 RESERVED

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38.101 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE; JUNE 8, 2020 RULEMAKING; FINAL ACTION AUGUST 10, 2020; EFFECTIVE DATE DECEMBER 31, 2020

The provisions of C.R.S. 25-8-202(1)(a), (b) and (2); 25-8-203; 25-8-204; and 25-8-402; provide the specific statutory authority for adoption of these regulatory amendments. The commission also adopted in compliance with 24-4-103(4) C.R.S. the following statement of basis and purpose.

BASIS AND PURPOSE

A. Water Body Segmentation

Some segments were renumbered, combined, or new segments were created to facilitate appropriate organization of water bodies in this regulation. Renumbering and/or creation of new segments was made based on information that showed: a) the original reason for segmentation no longer applied; b) significant differences in uses, water quality and/or physical characteristics warrant a change in standards on only a portion of the existing segment; and/or c) certain segments could be merged into one segment because they had similar water quality and uses. The following changes were made:

Upper South Platte segments 2b and 2c (COSPUS02b and COSPUS02c): The portion of Mosquito Creek from the confluence with South Mosquito Creek to Road #698 (39.270971, -106.098846) was moved from Segment 2b to Segment 2c. This move facilitated removal of the Water Supply use from Segment 2c, which now includes South Mosquito Creek, No Name Creek, and the portion of Mosquito Creek from South Mosquito Creek to Road #698. The Water Supply

use was retained on Segment 2b, which includes the portion of Mosquito Creek from Road #698 to the Middle Fork of the South Platte River.

Cherry Creek segments 5 and 7 (COSPCH05 and COSPCH07): Rueter-Hess Reservoir was moved from Segment 5 to new Segment 7 to facilitate adoption of a Class 1 Aquatic Life use classification based on the presence of a diverse fish community. Parker Water stated that it may seek removal of the Agricultural use classification from Segment 7 in a future hearing if evidence shows that there is no existing or reasonably expected agricultural use of water stored in the reservoir. A Direct Use Water Supply sub-classification was added to recognize the conveyance of raw water to a treatment facility. Parker Water provided information clarifying that the source water for Rueter-Hess Reservoir is diverted from Cherry Creek below a qualified discharger which means that application of interim numeric nutrient standards is not appropriate at this time, and expressed an interest in working with stakeholders to develop site-specific nutrient standards. As part of this change, an exception for Segment 7 was added to the segment description for Segment 5.

Clear Creek segments 12a and 12b (COSPCL12a and COSPCL12b): The portion of Beaver Brook from Highway 40 to the confluence with Soda Creek, and the mainstem of Soda Creek from the source to the confluence with Clear Creek, were moved from Segment 12a to Segment 12b. Segment 12b previously contained only the portion of Beaver Brook from the source to Highway 40 and is classified as Aquatic Life Cold 1 with CS-I temperature standards. The move facilitated changing the Aquatic Life use (from Cold 2 to Cold 1) and the temperature standards (from CS-II to CS-I) based on presence of brook trout in these water bodies.

St. Vrain Segment 6 (COSPSV06): Segment 6 was resegmented into 6a and 6b to recognize the presence of existing and potential future Water Supply use in a portion of the parent segment. Segment 6a includes the portion of Dry Creek and tributaries from the source to the inlet of Boulder ~~Creek~~ Reservoir and Segment 6b retained the rest of the stream portions from the parent segment. This resegmentation facilitated the adoption of the Water Supply use classification for Segment 6b.

Big Dry Creek Segment 5 (COSPBD05): Lakes and reservoirs from Segment 5 were moved into new Segment 5b. This was to be consistent with the convention of keeping lakes and reservoirs in separate segments from streams. Segment 5a retained the stream portions from the parent segment. As part of this change, an exception for Segment 5a was added to the segment description for Segment 4a and an exception for Segment 5b was added to the segment description for Segment 7.

Big Thompson segments 2, 3, 4a, 4b, 4c, and 7 (COSPBT02, COSPBT03, COSPBT04a, COSPBT04b, COSPBT04c, COSPBT07): Segments 2, 3, and 4a were combined into Segment 2, as the uses and standards are the same for all three segments as a result of upgrades to the Aquatic Life use (from Cold 2 to Cold 1) on Segment 3 and Recreation use (from seasonal N/E to year-round E) on Segment 4a. From Segment 2, the exception of Segment 7 was deleted, which resulted in moving the mainstem of the North Fork of the Big Thompson River from the Rocky Mountain National Park boundary to the confluence with the Big Thompson River to Segment 2 (the uses and standards are the same for segments 2 and 7). From Segment 2, the references to Black Canyon Creek and Glacier Creek below Estes Park water treatment plant were deleted, as this portion of these waters is outside of the Rocky Mountain National Park boundary and is in Segment 2 by default. To minimize the number of deleted segments retained as placeholders, Segment 4a was deleted, Segment 4b was renamed Segment 3, and Segment 4c was renamed Segment 4; segments 4b and 4c were then also deleted. The result of all changes combined is that waters previously in segments 2, 3, 4a, 4b, 4c, and 7 now occupy segments 2, 3, 4, and 7.

Cache la Poudre segments 2b and 3 (COSPCP02b and COSPCP03): Elkhorn Creek, including its tributaries and wetlands, from the source to a point immediately above the confluence with

Manhattan Creek, was moved from Segment 2b to Segment 3. The move facilitated changing the temperature standards from CS-II to CS-I based on presence of brook trout in Elkhorn Creek and its tributaries above Manhattan Creek. As part of this change, an exception for Segment 3 was added to the segment description for Segment 2b.

Cache la Poudre segments 7, 8, and 9 (COSPCP07, COSPCP08, COSPCP09): Segments 7, 8 (except for a few tributaries), and 9 were combined into Segment 7, as the uses and standards are the same for all three segments as a result of upgrades to the Aquatic Life use (from Cold 2 to Cold 1) on Segment 8. Segment 7 has CS-II temperature standards. Some Segment 8 tributaries (Middle Fork Rabbit Creek, Stonewall Creek, North Fork Lone Pine Creek, and South Fork Lone Pine Creek, including all tributaries and wetlands) remained in Segment 8 to facilitate changing the Aquatic Life use from Cold 2 to Cold 1 and the temperature standards from CS-II to CS-I. As a result of these changes, Segment 9 is now vacant (shown as "Deleted." in Appendix 38-1).

Cache la Poudre segments 11 and 12 (COSPCP11 and COSPCP12): Modifications were made to segments 11 and 12 to facilitate changes to the Aquatic Life use and temperature standards on a portion of Segment 11, and to add a Water Supply use to Segment 11 and a portion of Segment 12. The boundary between segments 11 and 12 was moved upstream, and Segment 12 was divided into segments 12a and 12b.

The portion of the mainstem of the Cache la Poudre River from Shields Street in Fort Collins to Prospect Road (40.567159, -105.027237) in Fort Collins remained in Segment 11 and the Aquatic Life use was changed from Warm 1 to Cold 1, the temperature standards were changed from WS-I to CS-II, and a Water Supply use was added. The portion of Segment 11 from Prospect Road to the confluence with Boxelder Creek was moved to the next downstream segment (Segment 12) to facilitate retention of the existing Aquatic Life Warm 1 use and WS-I temperature standards. As a result of this move, the upstream boundary of Segment 12 was moved approximately 2.75 miles upstream from Boxelder Creek to Prospect Road.

Segment 12 was divided into 12a and 12b to facilitate adoption of the Water Supply use on the upper portion of the segment. Segment 12a includes the mainstem of the Cache la Poudre River from Prospect Road to U.S. Hwy 85 (40.423323, -104.678956) in Greeley and has a Water Supply use. Segment 12b includes the portion of the Cache la Poudre River from U.S. Hwy 85 to the confluence with the South Platte River and was not assigned a Water Supply use.

In summary, Segment 11 (from Shields Street to Prospect Road) now has Aquatic Life Cold 1 and Water Supply uses, Segment 12a (Prospect Road to U.S. Hwy 85) remains Aquatic Life Warm 1 and a Water Supply use was added, and for Segment 12b no use classification changes were adopted.

Cache la Poudre segments 13b and 13c (COSPCP13b and COSPCP13c): The mainstem of Boxelder Creek from the source to above Slab Canyon Wash was moved from Segment 13b to Segment 13c to facilitate changing the Aquatic Life use from Warm to Cold. Segments 13b and 13c were then switched so that the segments were ordered from upstream to downstream. New Segment 13b contains Boxelder Creek from the source to Slab Canyon Wash, and the mainstems of South Branch of Boxelder Creek, Northern Branch of Boxelder Creek, and Sand Creek. New Segment 13c contains of Boxelder Creek from Slab Canyon to the confluence of the Cache la Poudre River.

Lower South Platte Segment 1 (COSPLS01): Segment 1 was split into segments 1a and 1b. Segment 1a includes the South Platte River from the Weld/Morgan County line to the Morgan/Washington County line. Segment 1b includes the South Platte River from the Morgan/Washington County line to the Colorado/Nebraska border. This resegmentation facilitates

changing the Aquatic Life use from Warm 2 to Warm 1 and the temperature standards from WS-II to WS-I on Segment 1a.

Lower South Platte segments 2a and 2b (COSPLS02a and COSPLS02b): Segments 2a and 2b were combined into new Segment 2, as the uses and standards are the same for both segments as a result of upgrades to the Aquatic Life use (from Warm 2 to Warm 1) on both segments and the Recreation use (from P to E) on Segment 2a, and the addition of the Water Supply use on Segment 2b. The segment description for Segment 2 is the same as Segment 2a, except it no longer has an exception for Segment 2b.

Lower South Platte Segment 3 (COSPLS03) and Middle South Platte Segment 8 (COSPMS08): Riverside Reservoir was moved from Lower South Platte Segment 3 to new Middle South Platte Segment 8. This change was made because Riverside Reservoir is actually in the Middle South Platte sub-basin.

Lower South Platte segments 4 and 5 (COSPLS04 and COSPLS05): Segments 4 and 5 were combined into Segment 4, as the uses and standards are the same for both segments as a result of application of the full suite of Aquatic Life standards on Segment 4 and an upgrade of the Recreation use (from P to E) on Segment 4. The segment description for Segment 4 was changed to eliminate the exception for Segment 5. Segment 5 was deleted.

Republican River segments 8 and 9 (COSPRE08 and COSPRE09): Segments 8 and 9 were combined into Segment 8, as the uses and standards are the same for both segments as a result of application of the full suite of Aquatic Life standards and upgrades to the Aquatic Life use (from Warm 2 to Warm 1) and Recreation use (from U to E) on Segment 8. The segment description for Segment 8 was changed to eliminate the exception for Segment 9. Segment 9 was deleted.

Segment descriptions were also edited to improve clarity, correct typographical errors, and correct spelling errors. These changes are listed in Section O.

B. Aquatic Life Use Classifications and Standards

The commission reviewed information regarding the current Aquatic Life use classifications and evidence pertaining to existing aquatic communities. In addition, newly created segments were given the same Aquatic Life use classification as the segment from which they were split, unless there was evidence to show that the existing use classification was inappropriate.

Some segments assigned an Aquatic Life use classification were missing one or more standards to protect that use. The commission adopted the missing standards for the following segments:

Cherry Creek: 4a (chronic total recoverable iron), 4b (chronic total recoverable iron)
Big Dry Creek: 4b (acute and chronic ammonia), 5a (acute and chronic ammonia), 5b (acute and chronic ammonia)
Lower South Platte River: 2 (full suite of aquatic life use standards), 4 (full suite of aquatic life use standards)
Republican River: 6 (full suite of aquatic life use standards), 7 (full suite of aquatic life use standards), 8 (full suite of aquatic life use standards)

The commission reviewed information regarding the existing aquatic communities. No segments were lacking an Aquatic Life use, but Class 2 segments with high MMI scores (or other metrics indicating a diverse benthic macroinvertebrate community) and/or a wide variety of fish species, including sensitive species, were upgraded from Class 2 to Class 1.

The following segments were upgraded from Cold 2 to Cold 1:

Bear Creek: 1b
Cache la Poudre River: 8, 13b

The following segments were upgraded from Warm 2 to Warm 1:

Upper South Platte River: 15, 16i
Cherry Creek: 1, 3, 7
Clear Creek: 18a
Big Dry Creek: 1
Boulder Creek: 7b, 8, 11
Middle South Platte River: 1a, 1b, 5c
Big Thompson River: 5, 9, 19
Cache la Poudre River: 13a, 13c
Lower South Platte River: 1a, 2
Republican River: 6, 8

Clear Creek Segment 14a (COSPCL14a): The commission did not ~~support~~ adopt the division's proposal to upgrade the Aquatic Life use classification on Clear Creek Segment 14a from Warm 2 to Warm 1 based on the evidence in the hearing. Some commissioners were concerned about the evidence regarding the presence of a wide variety of species, and other commissioners determined insufficient recent data were available to support an upgrade of the Aquatic Life use classification at this time.

Big Dry Creek Segment 1 (COSPBD01): While Water + Fish standards are typically applied to all Class 1 Aquatic Life segments which also have a Water Supply classification, the commission declined to apply the fish ingestion portion of the water + fish human health standards on Big Dry Creek segment 1 based on evidence presented that indicated fishing is not taking place on a recurring basis.

The commission reviewed information regarding the existing aquatic communities. For segments where the existing aquatic communities are not aligned with the Aquatic Life use, the following segments were changed from Warm to Cold:

The following segments were upgraded from Warm 1 to Cold 1:

Cache la Poudre River: 11

The following segment was upgraded from Warm 2 to Cold 1:

St. Vrain Creek: 5

The lists above include Aquatic Life use changes that apply to entire segments. Significant differences in the Aquatic Life use that warrant a change on only a portion of a segment are described in Section A (Water Body Segmentation).

The Aquatic Life Warm 1 Goal Qualifier was removed from the following segment because fish and benthic macroinvertebrate data demonstrate a wide variety of biota, including sensitive species, is currently being sustained:

Clear Creek: 15

The commission reviewed all Class 2 segments that have fish that are "of a catchable size and which are normally consumed and where there is evidence that fishing takes place on a recurring basis." Water + Fish or Fish Ingestion standards were applied to the following segments:

Clear Creek: 3b, 13b
Big Dry Creek: 7
Cache la Poudre River: 22
Lower South Platte River: 4

C. Recreation Use Classifications and Standards

The commission reviewed information regarding the current Recreation use classifications and evidence pertaining to actual or potential primary contact recreation. In addition, newly created segments were given the same Recreation use classification as the segment from which they were split, unless there was evidence to show that the existing use classification was inappropriate. The lists in this section include Recreation use changes that apply to entire segments. Significant differences in the Recreation use that warrant a change on only a portion of a segment are described in Section A (Water Body Segmentation).

Based upon evidence that portions of these segments are publicly accessible and located in a developed area where there is easy access for children, it was determined that primary contact recreation is expected to occur. The following segments with a Recreation P use classification and standards were upgraded to Recreation E:

Big Dry Creek: 1, 4b
Big Thompson River: 5 (changed from seasonal P application to year-round E)
Lower South Platte River: 2, 4

Based upon evidence that portions of these segments are publicly accessible and located in a developed area where there is easy access for children, it was determined that primary contact recreation is expected to occur. The following segments with a Recreation N use classification and standards were upgraded to Recreation E:

Big Dry Creek: 6
Big Thompson River: 3 (changed from seasonal N application to year-round E), 4 (changed from seasonal N application to year-round E), 5 (changed from seasonal N application to year-round E)

Based upon evidence that portions of these segments are publicly accessible and/or accessible to families who live in the area or visitors to public recreation lands in these segments, it was determined that primary contact recreation is expected to occur, including water play by children. The following segments with a Recreation U use classification and standards were upgraded to Recreation E:

Clear Creek: 17b, 24
Republican River: 8

Based upon evidence that portions of these segments are publicly accessible and/or accessible to families who live in the area or visitors to public recreation lands in these segments, it was determined that there is the potential for primary contact recreation, including water play by children. However, at this time, existing primary contact uses were not identified. Therefore, the following segments with a Recreation N use classification and standards were upgraded to Recreation P:

Cache la Poudre River: 13c (changed from seasonal N application to year-round P)
Republican River: 7

D. Water Supply Use Classification and Standards

The commission reviewed information regarding the current Water Supply use classifications and evidence pertaining to potable water supplies. In addition, newly created segments were given the same Water Supply use classification as the segment from which they were split, unless there was evidence to

show that the existing use classification was inappropriate. The lists in this section include Water Supply use changes that apply to entire segments. Significant differences in the Water Supply use that warrant a change on only a portion of a segment are described in Section A (Water Body Segmentation).

The commission added a Water Supply use classification and standards where the evidence demonstrated surface waters are used for drinking water and/or there is a reasonable potential for a hydrological connection between surface water and alluvial wells used for drinking water. The Water Supply use classification and standards were added to the following segments:

Upper South Platte River: 11b, 16a, 16e, 16k
Clear Creek: 13b
Big Dry Creek: 1
Boulder Creek: 8
St. Vrain Creek: 3, 6b
Middle South Platte River: 5c
Big Thompson River: 5, 6
Cache la Poudre River: 11, 12a, 13c
Republican River: 4, 6

Cache la Poudre River segments 11 and 12a (COSPCP11 and COSPCP12a): The commission adopted the Water Supply use classification and standards on Cache la Poudre River segments 11 and 12a with a 5 year delayed effective date (12/31/2025) due to the City of Fort Collins and Front Range Energy's challenges related to gathering information regarding the use of existing domestic water supply wells, as well as future uses, due to stay-at-home orders and resource limitations related COVID-19 (Coronavirus Disease 2019).

The commission removed the Water Supply use classification and standards where the evidence demonstrated that a Water Supply use does not currently exist due to flow or other conditions, and that such a use is not reasonably expected in the future due to water rights, source water options, or other conditions. The Water Supply standard for chloride was retained for these segments, given concerns regarding the protection of aquatic life by the existing Water Supply standards. The Water Supply use classification and standards, except for chloride, were removed from the following segments:

Upper South Platte River: 2c

Upper South Platte River Segment 2c (COSPUS02c): The commission removed the Water Supply use classification and standards from South Mosquito Creek, the portion of Mosquito Creek above Road #698 (39.270971, -106.098846), and No Name Creek. Evidence was presented that demonstrated that the Water Supply use does not currently exist, has not existed since 1978, and is not reasonably expected in the future due to the current land zoning and ownership and the significant depth of existing wells.

The commission retained the 250 mg/L chronic (30-day average) standard for chloride as an interim step, based on evidence presented in earlier hearings demonstrating the toxic effects of chloride on aquatic life. Retaining the current chloride standard is necessary to protect the assigned Aquatic Life uses and to ensure that these waters are free from substances that are toxic to aquatic life in accordance with 31.11(1)(a)(iv). The commission retained the numeric standard for chloride because narrative standards have often proved challenging to implement, and interim numeric standards will provide implementable interim standards while allowing time for development of robust replacement criteria based on the latest scientific information.

The commission recognizes that there is scientific uncertainty about the appropriate standards for chloride and/or sulfate to protect the Aquatic Life use, and that appropriate standards may need to recognize that toxicity is affected by site water characteristics (similar to the influence of hardness on the toxicity of dissolved metals). The commission's intention is that future revisions

to the numeric standards assigned to this segment, and also to Regulation No. 31 (i.e., aquatic life-based table values chloride and/or sulfate), can be considered if: (1) EPA issues new or updated CWA § 304(a) Aquatic Life criteria recommendations, (2) another state adopts new or revised Aquatic Life criteria and EPA approves, or (3) protective criteria otherwise become available that incorporate the latest scientific information on the risks to aquatic life posed by these pollutants.

E. Agriculture Use Classification and Standards

The commission reviewed information regarding the current Agriculture use classifications and evidence pertaining to livestock watering and crop irrigation for the three segments lacking an Agriculture use (Clear Creek segments 7a, 7b, and 8). Based on an evaluation of the available data and information, no changes were adopted at this time.

F. Other Standards to Protect Aquatic Life and Recreation Uses

The commission declined to adopt EPA's revised 304(a) Aquatic Life criteria for selenium, ammonia, and aluminum at this time; however, the division is committed to evaluating these new criteria. Studies are currently underway for each parameter to improve understanding of these criteria in the context of water quality conditions in Colorado and how these criteria may be adopted and implemented in Colorado in the future.

EPA has also released updated criteria or guidance for several other parameters, including copper (Aquatic Life), *E. coli* (Recreation), cyanotoxins (Recreation), and the human health risk exposure assumptions. However, the division does not recommend adopting EPA's recommendations for these parameters at this time, as these items are not included on the division's 10-year water quality roadmap.

G. Antidegradation Designations

The commission reviewed all segments designated Use Protected to determine if the Use Protected designation was still warranted. Based upon available water quality data, the Use Protected designation was upgraded to Reviewable on the following segments:

Boulder Creek: 11

Upper South Platte River Segment 15 (COSPUS15), Middle South Platte River Segment 1a (COSPMS01a), and Clear Creek Segment 15 (COSPCL15): The commission declined to adopt ~~a~~the division's proposal to upgrade the antidegradation classification from Use Protected to Reviewable on Upper South Platte River segment 15 and Middle South Platte River segment 1a. Additionally, the commission changed the antidegradation classification from Reviewable to Use Protected on Clear Creek segment 15. In its proposal to upgrade Upper South Platte River segment 15 and Middle South Platte River segment 1a to reviewable and to maintain Clear Creek segment 15 as reviewable the Division presented evidence and arguments that these segments did not qualify for use protected status under the tests set forth in section 31.8(2)(b). Other parties presented evidence and arguments that these segments should be designated as use protected under the tests set forth in section 31.8(2)(b) and the statutory language, "Use-protected waters shall be those waters with existing quality that is not better than necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water." CRS 25-8-209(4). Despite the regulatory language, t~~T~~he commission decided that as a matter of policy, due to the unique circumstances and evidence presented in this hearing for these particular segments, ~~that~~ it is ~~was~~ more consistent with the statutory language ~~("Use-protected waters shall be those waters with existing quality that is not better than necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water." CRS 25-8-209(4))~~ for these segments to be classified as Use Protected.

For Upper South Platte River Segment 15 and Middle South Platte River Segment 1a, the commission retained the Use Protected designation based on the weight of the evidence including that the segments receive multiple treated wastewater discharges, aquatic habitat is impacted by flow reductions from multiple manmade diversions, and there was insufficient evidence to demonstrate that existing water quality is better than necessary to support fishable and swimmable uses. ~~For example, Middle South Platte River Segment 1a is currently on the section 303(d) list for *E.* coli., and water quality standard exceedances have been observed for cadmium (dissolved), temperature, chloride, and dissolved oxygen, and chlorophyll 'a' for these segments.~~ For example, in Upper South Platte River Segment 15, water quality exceedances have been observed for *E. coli*, cadmium (dissolved), ammonia, temperature, and chlorophyll 'a', and Middle South Platte River Segment 1a is currently on the section 303(d) list for *E. coli*, and water quality standard exceedances have been observed for dissolved oxygen and chlorophyll 'a'.

For Clear Creek Segment 15, the commission changed the antidegradation designation to Use Protected based on the weight of the evidence including that the segments receive multiple treated wastewater discharges, aquatic habitat is impacted by flow reductions from multiple manmade diversions, and the existing water quality is not better than necessary to support fishable and swimmable uses. For example, Clear Creek Segment 15 is currently on the section 303(d) list for organic sediment, temperature, ammonia, and *E. coli*.

The Commission's policy decision that these segments should be designated Use Protected based on existing quality is substantially influenced by the fact that these segments have been impacted by water quality pollutants for decades. However, the commission also noted that marked improvements in water quality have occurred over time and that improved water quality conditions may warrant reconsideration in the future. The Commission notes that water quality impacts resulting from a spill or other short term water quality condition would present very different circumstances, which the Commission is not addressing in the current action.

H. Ambient Quality-based Site-specific Standards

Site-specific ambient quality-based standards are adopted where a comprehensive analysis has been conducted demonstrating that ambient water quality levels elevated above the water quality standards are a result of natural conditions or are infeasible to reverse, but are adequate to protect the highest attainable use (31.7(1)(b)(ii)). All existing ambient-based standards were reviewed and no revisions were made.

Cherry Creek Segment 4b (COSPCH04b): During the 2015 Regulation No. 38 rulemaking hearing, the commission adopted site-specific ambient quality-based standards for selenium for Segment 4b and directed Cottonwood Water and Sanitation District (CWSD) to develop a study plan in agreement with stakeholders to collect additional baseline data that would support a "before and after discharge" evaluation of aquatic life. In this rulemaking, CWSD provided an update to the commission regarding the study plan developed and implemented for baseline data collection and describing activities completed since 2015. Given the potential detrimental effect of increased selenium to the downstream Aquatic Life use after discharge from the plant resumed in early 2020, CWSD agreed to a longevity plan that details continued data collection and highest attainable use evaluation activities to support review of the ambient-based standards. The plan includes equivalent or better sampling as the "before" study to demonstrate whether the site-specific standards are appropriate to protect downstream aquatic communities such as the commercially important walleye fishery in Cherry Creek Reservoir. The commission will review these site-specific ambient quality-based standards in the next Regulation No. 38 rulemaking hearing using data collected by CWSD over the next five years to determine if the site-specific standards are still appropriate and protective of the Aquatic Life use in Segment 4b and downstream waters.

I. Site-specific Criteria-based Standards

Site-specific criteria-based standards are adopted where site-specific studies demonstrate standards other than table value standards are appropriate (31.7(1)(b)(iii)). All existing criteria-based site-specific standards were reviewed, and where appropriate were revised, allowed to expire, or deleted. Site-specific standards were allowed to expire from the following segments:

Clear Creek: 14a (acute and chronic zinc), 14b (acute and chronic zinc), 15 (acute and chronic zinc)

Site-specific copper standards based on the Fixed Monitoring Benchmark (FMB) application of the Biotic Ligand Model (BLM) were adopted for multiple segments during the December 2014 temporary modifications rulemaking (Big Thompson Segment 2) and the June 2015 Regulation No. 38 rulemaking (Upper South Platte segments 14, 15, and 16g and Middle South Platte Segment 1a). When these site-specific standards were adopted, proponents agreed to longevity plans that included continued monitoring and analysis of BLM parameters to facilitate review of the standards at the future basin hearings (38.90(I)).

Using these data, the commission reviewed all segments with BLM-based standards for copper. To determine if water quality conditions had changed significantly and standards revisions were necessary, existing BLM-based standards were compared to BLM-based standards calculated from the more recent datasets using a 95 percent confidence interval approach.

Based on an evaluation of more recent data, BLM-based site-specific copper standards were not revised for the following segments:

Upper South Platte River: 14, 16g
Big Thompson River: 2

Based on an evaluation of more recent data, BLM-based site-specific copper standards were revised for the following segments:

Upper South Platte River: 15
Middle South Platte River: 1a

The commission will review these BLM-based standards in the next Regulation No. 38 rulemaking hearing using data collected over the next five years to ensure that BLM-based standards capture any changes in water quality. Centennial Water and Sanitation District, Metro Wastewater Reclamation District, and Upper Thompson Sanitation District have agreed to longevity plans to continue all necessary data collection and evaluation activities to support review of the BLM-derived copper standards at the next Regulation No. 38 hearing.

J. Temporary Modifications

All existing temporary modifications were examined to determine whether they should be deleted, modified, extended, or left unchanged.

1. Temporary Modifications for Standards Other than Arsenic

The commission allowed to expire on 12/31/2020 temporary modifications on the following segments:

Upper South Platte River: 10 (temperature), 15 (chloride, sulfate)
Clear Creek: 7a (cadmium, copper, iron, lead, mercury, nickel, silver, zinc), 7b (cadmium, copper, iron, lead, mercury, nickel, silver, zinc)
Clear Creek: 13b (temperature)

St. Vrain Creek: 6 (manganese), 7 (iron and manganese)
Big Thompson River: 9 (selenium)

Clear Creek Segment 13b (COSPCL13b): Black Hawk and the Black Hawk – Central City Sanitation District withdrew its proposal to extend the existing temperature temporary modification for Segment 13b based on its agreement with the division, EPA, and CPW that a temporary modification is not the most appropriate regulatory tool to address temperature issues at its treatment facility at this time. Uncertainty remains regarding the appropriate underlying standards and the extent of contributions from natural and irreversible human-induced conditions; however, Black Hawk – Central City Sanitation District currently has no effluent limits for temperature in their permit and may qualify for a compliance schedule for temperature limits when the permit is renewed. In addition, Black Hawk is expected to evaluate whether it may be possible to attain effluent limits based on the current underlying standard. The commission expects that the division will continue to work with Black Hawk and the Black Hawk – Central City Sanitation District regarding the use of appropriate regulatory tools, including temporary modifications or discharger specific variances, as new information becomes available regarding the uncertainties related to temperature on Segment 13b.

St. Vrain segments 6 and 7 (COSPSV06 and COSPSV07): The commission allowed the temporary modifications for manganese on Segment 6 and iron and manganese on Segment 7 to expire on 12/31/2020, as the underlying water quality standards are being attained.

The commission modified the following temporary modifications:

Upper South Platte River: 15, 16g
Clear Creek: 7a (temperature), 7b (temperature)
St. Vrain Creek: 6a

Upper South Platte Segment 15 (COSPUS15): Metro Wastewater Reclamation District proposed a one year extension to the existing “current condition” temporary modification for temperature (expires 12/31/2020, new expiration 12/31/2021). The extension of the temporary modification is based on Metro’s information showing continued instream non-attainment of temperature standards and predicted compliance problems with water quality-based effluent limits (WQBELs). Additional time is needed to finish developing a proposal for a discharger specific variance (DSV). Metro has committed to a plan to resolve uncertainty that includes ongoing monitoring and reporting of instream and effluent temperature, as well as providing annual updates to the division in June through the duration of the temporary modification, beginning in 2020 (Metro Exhibit 12).

Upper South Platte Segment 16g (COSPUS16g): Centennial Water & Sanitation District provided an update to the commission regarding progress being made in implementing the existing plan to resolve uncertainty and demonstrating the ongoing need for the temporary modification of the chronic temperature standard (expires 12/31/2020). Centennial presented information that shows continued instream non-attainment of chronic temperature standards, predicted compliance problems with water quality-based effluent limits (WQBELs) during the winter months, and significant uncertainty regarding the appropriate chronic winter temperature standards. Centennial demonstrated the need for an extension of the temporary modification to provide time to complete an alternatives analysis to determine feasible alternatives for controlling temperature at its facility and potentially develop a discharger-specific variance. More time is also needed to collect additional temperature data, characterize the highest attainable Aquatic Life use, potentially participate in temperature standards studies, engage with stakeholders, and review low-cost options to improve water quality. Centennial has committed to providing annual updates to the division each June

through the duration of the temporary modification, beginning in 2021, and final results of the alternatives analysis will be provided to the division by June 2023.

Based on this information, the commission adopted an extension of the temporary modification (MWAT = “current condition”, 12/1-2/29) with the plan to resolve uncertainty submitted by Centennial (Exhibit 6). The temporary modification applies only for the periods with concurrent instream non-attainment and WQBEL non-compliance (December through February) and expires December 31, 2025. The operative value of the temporary modification is the narrative “current condition.” In future reviews of this temporary modification, the commission will use the following values to compare to the most recent five years of representative data to determine if effluent and waterbody quality is maintained and ensure that the existing uses are protected. These values are for use by the commission in future reviews of the temporary modification and are not intended to direct the division’s implementation of "current condition" temporary modifications in permits:

1) winter (12/1-2/29), effluent (MWAT = 19.2°C, based on data for December, January and February from 1/1/2008 - 12/31/2015)
2) winter (12/1-2/29), instream (MWAT = 17.4°C, at site “Downstream of Marcy Gulch” based on data for December, January and February from 1/01/2008 - 12/31/2015)

Additionally, the commission will consider whether seasonal trends of warming and cooling have been maintained.

Clear Creek segments 7a and 7b (COSPCL07a and COSPCL07b): Climax Molybdenum Company provided an update to the commission regarding progress being made in implementing the existing plan to resolve uncertainty and demonstrating the ongoing need for the temporary modifications for chronic and acute temperature, copper, and zinc; chronic cadmium, iron, lead, mercury, nickel, and silver for Clear Creek segments 7a and 7b that are set to expire 6/30/2023. The commission deleted the temporary modifications for metals based on an evaluation of the available instream and effluent data that demonstrated attainment of the standards instream and the lack of a water quality-based effluent limit (WQBEL) compliance issue.

For temperature, Climax’s update demonstrated continued instream nonattainment, predicted compliance issues, and remaining uncertainty regarding the appropriate underlying standards to protect the uses and the extent to which instream conditions are reversible. Climax also provided an updated plan to resolve uncertainty (Exhibit 5) that included details regarding the scheduled investigations and reporting required to resolve the uncertainty by 6/30/2023. Additionally, the temporary modification was narrowed to apply only for the periods with concurrent instream non-attainment and predicted WQBEL non-compliance (MWAT = “current condition”, 10/1-11/30 and 4/1-5/31). The operative value of the temporary modification is the narrative “current condition” and the expiration date remains unchanged.

In future reviews of this temporary modification, the commission will use the following values to compare to the most recent five years of representative data to determine if effluent quality is maintained and ensure that the existing uses are protected. These values are for use by the commission in future reviews of the temporary modification and are not intended to direct implementation of "current condition" temporary modifications in permits:

1) 4/1-5/31, effluent (MWAT = 13.1°C, based on data for April and May from 1/1/2014 - 12/17/2019)
2) 10/1-11/30, effluent (MWAT = 13.9°C, based on data for October and November from 1/1/2014 - 12/17/2019)

Additionally, the commission will consider whether seasonal trends of warming and cooling have been maintained.

Data to adequately characterize the status quo of the waterbody at the time the temporary modification was originally adopted were not available. It is the commission's expectation that as more data become available to characterize instream waterbody temperature conditions, representative numeric values to represent instream status quo will be determined as soon as possible for the commission's use in future reviews of this temporary modification.

St. Vrain Segment 6a (COSPSV06a): For Segment 6a, the commission extended the "current condition" temporary modification for total recoverable iron from 12/31/2020 to 6/30/2023 to provide time for Raytheon to investigate the sources and characterize the highest attainable use. Raytheon provided an updated plan to resolve uncertainty that includes a detailed timeline for data collection and updates every 6 months to the division and stakeholders (Revised Exhibit 4). The commission determined that a temporary modification continues to be justified based on demonstrated instream non-attainment, uncertainty regarding the underlying standard, demonstrated compliance problems, and a robust plan to resolve the uncertainty and eliminate the need for the temporary modification by 6/30/2023.

The operative value of the temporary modification is the narrative "current condition." The temporary modification for iron was first adopted by the commission in December 2016. Data to characterize the baseline condition when the temporary modification was adopted are available for Seep 1 and Seep 2, and more recent water quality data are available for the site 300 feet downstream of Seep 2. In future reviews of this temporary modification, the commission will use the following values to compare to the most recent five years of representative data to determine if effluent quality is maintained and ensure that the existing uses are protected. These values are for use by the commission in future reviews of the temporary modification and are not intended to direct implementation of "current condition" temporary modifications in permits:

1) Seep 1: 50th percentile = 420 µg/L and maximum = 2,920 µg/L, based on data from 11/9/2011-12/1/2016
2) Seep 2: 50th percentile = 3,825 µg/L and maximum = 13,000 µg/L, based on data from 2/6/2012-12/1/2016
3) 300 feet downstream of Seep 2: 50th percentile = 275 µg/L and maximum = 3,370 µg/L, based on data from 11/2/2016-2/6/2020

2. Temporary Modifications for Arsenic

To remain consistent with the commission's decisions regarding arsenic in section 38.99, all existing temporary modifications for arsenic of "As(ch)=hybrid" (expiration date of 12/31/24) were retained. In addition, for segments where a Water Supply or Aquatic Life use change resulted in a corresponding revision of the arsenic standard, an arsenic temporary modification was adopted for the 0.02 µg/L Water + Fish numeric standard in recognition of existing and predicted compliance issues, instream nonattainment, and the uncertainty regarding the water quality standard necessary to protect current and/or future uses and the extent to which ambient concentrations of arsenic are natural or irreversible (31.7(3)).

The division submitted a plan to resolve uncertainty in the 2019 Temporary Modifications rulemaking. The division plans to propose revised standards for arsenic as soon as possible following updated toxicological information from EPA's Integrated Risk Information System (IRIS) and completion of ongoing studies to better understand arsenic conditions in Colorado. Furthermore, per the conditions of the revised and extended temporary modification at 38.6(2)(c) (effective 6/30/2020 and expires 12/31/2024), and based on the widespread need to make progress to understand sources of arsenic and set forth processes for lowering arsenic in discharges, additional permit Terms and Conditions

(T&Cs) are being implemented for facilities benefitting from the "current condition" temporary modification. These T&Cs may include requirements for additional monitoring, source identification, and characterization of source control and treatment options for reducing arsenic concentrations in effluent. The commission recognizes the need to resolve the uncertainty in the arsenic standards and ensure that human health is adequately protected.

Temporary modifications for arsenic were added to the following segments:

Upper South Platte River: 11a, 15, 16i, 16k
Cherry Creek: 1, 3, 4b, 7
Clear Creek: 13b, 18a
Boulder Creek: 7b, 8, 11
St. Vrain Creek: 3, 5, 6b
Big Thompson River: 5, 6, 9
Cache la Poudre River: 13a, 13b, 13c
Lower South Platte River: 2
Republican River: 4, 6

As a result of a change to the underlying arsenic standard due to removal of the Water Supply use, the temporary modification for arsenic is no longer needed and was removed from the following segment:

Upper South Platte River: 2c

K. Discharger Specific Variances

There is currently one discharger specific variance (DSV) for selenium which applies to two segments (Upper South Platte segments 15 and 16i). The commission reviewed the basis for this DSV and the available information regarding Suncor Energy (U.S.A.) Inc.'s progress toward achieving the alternate effluent limit. The commission determined that the alternative effluent Limit (AEL) adopted in 2016 continues to represent the highest attainable water quality that is feasible for Suncor to achieve. Therefore, the commission determined that this DSV is still appropriate and does not require revision at this time.

L. Temperature Standards

The commission revised temperature criteria in Regulation No. 31 in 2007, and again in 2010, based on the development of the Colorado Temperature Database and a lengthy stakeholder process. In 2015, the new temperature standards were adopted for all segments with an Aquatic Life use classification in Regulation No. 38. In June 2016, temperature criteria in Regulation No. 31 were further revised, including changes to the temperature table value standards, revision of warm water winter acute standards, and the addition of footnotes to protect lake trout and mountain whitefish.

1. **Colorado Temperature Database Update:** The Colorado Temperature Database was updated in 2016 to reflect the most recent research regarding the thermal requirements of Colorado's fishes, which allowed for adoption of an overall update of the cold and warm water acute and chronic temperature table value standards. In this hearing, the commission adopted revisions at 38.6(3) to bring this regulation into conformity with the revised table value standards found in Table I of Regulation No. 31.

2. **Warm Water Winter Acute Table Values:** The 2016 updates to the temperature database also allowed for the adoption of revisions to the warm water winter acute table values. When seasonal numeric temperature standards were first adopted in 2007, warm water winter acute and chronic standards were simply set at half the summer season table values, recognizing a pattern seen in cold waters. In 2016, the acute winter table values for warm water fish were revised based on

lethal temperature thresholds established in laboratory experiments for fish acclimated to "winter" temperatures. Standards derived using this new method more accurately protect warm water fish from acute thermal effects in winter. In this hearing, the commission adopted revisions at 38.6(3) to bring this regulation into conformity with the revised warm water winter acute temperature table value standards found in Table I of Regulation No. 31.

3. **Mountain Whitefish and Lake Trout Footnotes:** In 2016, the commission adopted two footnotes to Table I of Regulation No. 31 to allow for additional thermal protection of mountain whitefish and lake trout where appropriate. These species were given special summer standards due to their thermal sensitivity and limited distributions. Lake trout occur in only a small number of lakes and reservoirs, and thermally-sensitive early life stages of mountain whitefish are known to occur only in certain cold waters during certain times of the year.

   While early life stages of mountain whitefish are known to be the most thermally-sensitive, the time period these early life stages occur can vary from site to site. Mountain whitefish spawn in the fall, but timing of spawning, incubation, and emergence all depend on a variety of site-specific factors, including water temperature. The incubation period takes longer when water is colder, and that will delay hatching, emergence, and migration of fry. Depending on when spawning occurs and the water temperature in which the eggs are spawned and incubated, the incubation period could last through late spring.

   Based on information provided by CPW, thermally-sensitive early life stages of mountain whitefish occur in certain water bodies in Regulation No. 38. Spawning begins in October and the fry life stage is complete by May in these water bodies. Therefore, only limited application of the mountain whitefish summer temperature standards to protect eggs, larvae, and fry is necessary.

   In segments currently assigned CS-I temperature standards, the application of the mountain whitefish summer temperature standards is not necessary. The winter season included in CS-I temperature standards (i.e., October to May) is expected to cover the period when mountain whitefish early life stages are expected to occur (i.e., October to May). In addition, the CS-I winter standards are more stringent than the mountain whitefish summer standards. Therefore, because the CS-I temperature standards are protective of mountain whitefish early life stages, the commission did not adopt the mountain whitefish summer standards on segments with CS-I temperature standards. While the commission made no changes to the temperature standards, mountain whitefish spawning and early life stages are known to occur in the following CS-I segment:

   Cache la Poudre River: 2a

   In this hearing, the commission adopted standards to protect lake trout on a site-specific basis where information provided by CPW indicated that this species occurs and protection from thermal impacts is appropriate. Adoption of lake trout standards is dependent on two factors: the existing temperature tier (cold lake or cold large lake) and whether a site-specific temperature standard was already in place. For cold lakes, only the chronic lake trout standard was adopted, as the acute cold lake temperature standard (21.2°C) is more protective than the acute lake trout standard (22.4°C). The chronic lake trout standard (16.6°C) is more protective than the chronic cold lake temperature standard (17.0°C). For cold large lakes, both acute and chronic lake trout standards were adopted unless there was a site-specific standard in place. Acute and chronic lake trout standards (22.4 and 16.6°C, respectively) are more protective than acute and chronic cold large lake standards (24.2 and 18.3°C, respectively). Lake trout standards were not proposed where an existing site-specific standard is applied.

   Temperature standards to protect lake trout were applied to the following segments:

   Upper South Platte River: 19 (Jefferson Lake DM and MWAT)

Clear Creek: 21 (Chase Gulch Reservoir MWAT)
Boulder Creek: 14 (Barker Reservoir MWAT), 18 (Gross Reservoir DM)
Big Thompson River: 11 (Carter Reservoir DM)
Cache la Poudre River: 18 (Barnes Meadow Reservoir MWAT; Chambers Lake DM and MWAT)

4. **Refinement of Temperature Standards:** Since temperature criteria were revised in Regulation No. 31 in 2007, the division and others have worked to ensure that appropriate temperature standards were adopted for segments throughout the state. At times, this effort to assign temperature standards has also included reevaluation of the existing Aquatic Life use classifications, and use revisions have been proposed and adopted where appropriate. Incremental progress continues as temperature standards are refined based on the experience and data gains that have occurred since initial adoption of temperature standards.

   In the 2016 Regulation No. 31 hearing, the commission declined to adopt the division's proposal for statewide solutions for temperature transition zones and shoulder seasons, in favor of a basin-by-basin consideration of temperature standards on a site-specific basis. The basin-by-basin approach was selected as it allows for consideration of temperature attainability and ambient quality-based site-specific temperature standards issues in the context of multiple lines of evidence and site-specific contravening evidence. The sections below describe the considerations and methods used to develop and support the site-specific temperature standards revisions adopted in this basin hearing.

   i. Existing Uncertainty: While a great deal of progress has been made regarding the development and implementation of temperature standards, uncertainty still remains for some segments due to the lack of site-specific temperature or aquatic community information or conflicts between the lines of evidence. To address the uncertainty, additional data collection has been conducted where possible, and all new information collected since the last basin review was evaluated.

   ii. Attainability: Following the commission's 2016 direction to consider attainability issues using a basin-by-basin approach, the division reviewed all available information to identify segments where attainability issues may exist based upon available instream temperature data and expected in-stream summer maximum weekly average temperatures (MWATs). Expected MWATs were determined using regression analysis of temperature and elevation and the NorWeST Stream Temperature Regional Database and Model. This screening found that many segments, or portions of segments, were not expected to attain the summer or winter chronic temperature standards. These waters were targeted for additional review, as were waters listed as impaired for temperature on the 2020 303(d) List.

   iii. Aquatic Life Use: For these selected segments, the division conducted a comprehensive, site-specific review of the existing use classification and temperature standards. Fishery data provided by CPW was evaluated to identify fish species expected to occur, whether reproduction is expected (i.e., stocked, transient, or resident species), age class structures, and any other relevant information regarding aquatic life communities. For segments where little or no information on fish species expected to occur existed, fish population data from adjacent and representative water bodies was utilized when possible.

   iv. Thermal Drivers: In cases where temperature standards to protect the highest attainable use were determined, but the temperature standards were not attainable, site-specific factors that influence in-stream temperature were evaluated to identify any correctable anthropogenic thermal sources. All available data on temperature, hydrology, hydro-modification, canopy cover, groundwater influence, point and non-point thermal sources, and other relevant information was reviewed.

Temperature standards have been implemented and reviewed in Regulation No. 38 during three triennial reviews - 2009, 2015, and 2020. The level of emphasis and effort dedicated to understanding the aquatic community and temperature standards implementation during these reviews has resulted in a great deal of progress and application of appropriate temperature standards across the basin. Accordingly, no site-specific temperature standards and fewer Aquatic Life use revisions were necessary compared to previous basin reviews.

Based upon a review of information regarding the species expected to occur, temperature data, physical habitat, land cover/use, groundwater inputs, flow conditions, and all other available information regarding thermal drivers, no segments were identified as warranting a change to less stringent temperature standards as a result of water quality that is not feasible to improve or where the thermal regime is the result of natural conditions, but is sufficient to protect the highest attainable use.

Based upon information regarding the species expected to occur, the commission adopted revisions of temperature standards to protect thermally-sensitive species for the segments listed below.

The following segments were changed from CS-II to CS-I:

Cache la Poudre River: 3, 8

The following segments were changed from WS-I to CS-II:

St. Vrain Creek: 5
Cache la Poudre River: 11

Cache la Poudre Segment 11 (COSPCP11): Based on fish data collected by various entities and provided to the division by CPW that show the presence of cold water species, including reproducing brown trout and longnose sucker, the commission changed the Aquatic Life use from Warm 1 to Cold 1 and temperature standards from Warm Stream Tier I to Cold Stream Tier II (CS-II). Northern Colorado Water Conservancy District and the City of Fort Collins opposed this change due to uncertainty regarding the attainability of CS-II table value standards in this segment and their intent to pursue site-specific temperature standards at a later hearing. Adoption of CS-II temperature standards to protect the existing Aquatic Life use is necessary and appropriate; however, site-specific refinements may be warranted as additional information and analyses become available regarding the highest attainable Aquatic Life use and feasible temperature control. The commission appreciates the work of the Cache la Poudre Transition Zone work group and supports its continued work. It is the commission's intent that the division will continue to work with interested parties, through the existing Cache la Poudre Transition Zone workgroup and other relevant forums, to determine whether site-specific standards, such as feasibility-based ambient standards or criteria-based standards, are appropriate for this segment, and/or if a compliance schedule or discharger specific variance(s) is appropriate for dischargers to Segment 11 such as Fort Collins.

The following segments were changed from WS-II to WS-I:

Boulder Creek: 7b
Middle South Platte River: 1a, 1b
Cache la Poudre River: 13c
Lower South Platte River: 1a

Further investigation of the appropriate temperature standards is needed, so no changes were adopted at this time for the following segments:

Clear Creek: 14a, 14b, and 15

Clear Creek segments 14a, 14b, and 15 (COSPCL14a, COSPCL14b, COSPCL15): These segments are currently assigned Warm Stream Tier II temperature standards. However, the commission recognizes that there is uncertainty about the appropriate temperature standards applied to these segments based on fish data available from CPW for Clear Creek segments 14a and 15 that show the presence of several cold water species, including consistent catches of large numbers of brown trout and longnose suckers, and occasional catches of rainbow trout, and single-year catches of brook trout and cutthroat trout. Reproduction of cold water species has not been investigated in any of these segments. No fish data are available for Segment 14b, which is a short segment located between segments 14a and 15. These data raise questions regarding the appropriateness of the Warm Stream Tier II temperature standards for these segments. It is the commission's intent that the division will continue to work with CPW and interested parties to resolve the uncertainty regarding whether these populations are self-sustaining, and to what degree the drop structure at the most upstream portion of Segment 14a is obstructing upstream return of cold water fish flushed downstream.

M. Direct Use Water Supply Sub-classification

In the March 2012 rulemaking hearing, the commission adopted a sub-classification of the Domestic Water Supply Use called “Direct Use Water Supply Lakes and Reservoirs Sub-classification” (DUWS), in Regulation No. 31, at 31.13(1)(d)(i). This sub-classification is for Water Supply lakes and reservoirs where there is a plant intake location in the lake or reservoir or a man-made conveyance from the lake or reservoir that is used regularly to provide raw water directly to a water treatment plant that treats and disinfects raw water. The commission began to apply this sub-classification in 2013 and anticipated that it would take several basin reviews to evaluate all the reservoirs in the basin. The commission adopted the DUWS sub-classification on the following reservoirs and added “DUWS” to the classification column in the standards tables:

Upper South Platte River: 19 (Woodland Park Reservoir), 22a (Marshall Reservoir)
Cherry Creek: 7 (Rueter-Hess Reservoir)
Clear Creek: 21 (Hole in the Ground Reservoir, Chase Gulch Reservoir, Beaver Brook Reservoir No. 2)
Big Dry Creek: 7 (Welton Reservoir)
Boulder Creek: 17 (Goosehaven Reservoir, Erie Lake, Twomile Canyon Reservoir)
Big Thompson River: 16 (Mirror Lake) and 17 (Pinewood Lake)

N. Standards Corrections and Clarifications

1. **Duration of Nitrite Standard:** The division withdrew its proposal to change the nitrite standard from chronic to acute for multiple segments throughout Regulation No. 38. This withdrawal was based on information provided by CPW (Exhibit 2) demonstrating that the standard is currently and appropriately listed in the tables as chronic, as was recommended by the Nitrogen Cycle Committee of the Basic Standards Review Task Force, and adopted by the commission in 1986.

2. **Uranium:** To improve the clarity of the regulation, the commission included references to the basin-wide uranium standards at 38.5(3) in the Appendix 38-1 tables. For the acute and chronic uranium standards for all segments, the commission included a reference to 38.5(3) to clarify that the basic standard at 38.5(3) applies to all waters in Regulation No. 38. Because these standards already applied basin-wide, there is no practical effect of this change.

3. **Mercury:** To improve the clarity of the regulation, the commission added Total Recoverable notation (T) to the mercury Aquatic Life and Water Supply standards. The standards apply to the total recoverable fraction of all forms, both organic and inorganic, of mercury in water. Multiple forms of mercury exist in the environment and these forms differ dramatically in both their potential to cause toxic effects and their availability for uptake by organisms. Certain aquatic conditions can lead to the conversion to the highly bioaccumulative, toxic, organic form (methylmercury). The mercury standards are designed to provide protection from the accumulation of those toxic forms and therefore, the standards address all forms of mercury. The addition of the Total Recoverable notation does not represent a change in current Colorado policy or procedures.

O. Correction of Typographical and Other Errors and Segmentation Clarification

The following edits were made to the regulation and Appendix 38-1 to improve clarity and correct typographical errors:

- The formatting of the tables in Appendix 38-1 was modified to include only parameters that have been adopted in a majority of segments. The tables include rows for physical and biological, inorganic, and metals for all parameters which the commission commonly adopts into segments. In segments where there is no numeric standard for a commonly adopted parameter, a blank row for that parameter is included to show the commission's site-specific decision not to adopt a numeric standard for that parameter. The commission removed beryllium and aluminum from all segments where no standard has been adopted because these parameters have only been adopted on a site-specific basis, rather than basin-wide.
- Information was added at 38.6(5) specifying that the mercury standards apply to the total recoverable fraction of all forms, both organic and inorganic, of mercury in water.
- Information was added at 38.6(5) specifying that the ammonia, nitrate, and nitrate standards are to be reported as nitrogen. This is consistent with the description of the standards as they are included in Table II of Regulation No. 31.
- Information regarding site-specific ammonia and dissolved oxygen standards previously adopted for Upper South Platte Segment 15 and Middle South Platte Segment 1a was moved from Appendix 38-1 to 38.6(4) and edited for clarity.
- Information regarding site-specific radionuclide standards previously adopted for Big Dry segments 2, 3, 4a, 4b, 5 was moved from Appendix 38-1 to 38.6(4) and edited for clarity.
- Some segments that were previously deleted, but were reserved as placeholders in Appendix 38-1, were permanently removed from the appendix. Previously-deleted segments that are necessary to maintain continuous numbering of segments were retained. The following previously-deleted segments were not necessary to maintain continuous numbering of segments, and were removed from Appendix 38-1:

  Upper South Platte River: US06c, US10b
  Bear Creek: 4b and 4c

- Existing site-specific temperature standards were reformatted in the tables to provide clarity and consistency for the following segments:

  Upper South Platte River: 6b, 19
  Bear Creek: 1b, 1c, 1e
  Boulder Creek: 18
  Big Thompson River: 11
  Cache la Poudre River: 14, 20
  Lower South Platte River: 3

- The segment descriptions in Appendix 38-1 were reviewed, and minor revisions were made to several segments to correct grammar, punctuation, and typos, and improve sentence structure. The purpose of these changes was to improve clarity and consistency of the segment descriptions.

  Upper South Platte River: 2a, 3, 4, 7, 8, 11b, 16c, 19, 21, 22a, 23
  Cherry Creek: 4a
  Bear Creek: 3, 6a,11
  Clear Creek: 2a, 2b, 2c, 3a, 6, 10, 13b, 16b, 21, 24
  Big Dry Creek: 1, 4a, 4b, 5a, 7
  Middle South Platte River: 3a, 5c
  Big Thompson River: 2, 3, 4, 19
  Cache la Poudre River: 1, 6, 7, 13a, 18, 21
  Laramie River: 2a, 4
  Lower South Platte River: 3, 4
  Republican River: 1, 3, 6, 8

- Coordinates were added to several segment descriptions to facilitate location of segment boundaries.

  Upper South Platte River: 16d, 16e, 16f
  Big Thompson River: 2, 3, 6, 8, 9, 10, 16, 17, 18, 19
  Cache la Poudre River: 2b, 10a, 10b, 13a, 16, 18, 21

- Bear Creek Segment 7: The effective date of 12/31/2020 for phosphorus(chronic) was deleted from the 'Other' column, as the standard will be effective on the effective date of this regulation.

- Cherry Creek segments 1, 4a, and 4b: The effective date of 12/31/2020 for phosphorus(chronic) was deleted from the 'Other' column, as the standard will be effective on the effective date of this regulation.

- Clear Creek Segment 12a: Added missing footnote "A" that accompanies Arsenic(T) standard of 0.02-10 µg/L.

- Clear Creek Segment 12b: The designation for the 0.02 µg/L arsenic standard for Water Supply was changed from arsenic to arsenic(T) to reflect the correct fraction of arsenic protective of the use.

- Clear Creek Segment 16b: The exception for Segment 17a was removed. Segment 17a is a lakes and reservoirs segment, while Segment 16b is a stream segment.

- Big Dry segments 2, 4a, 4b, 5a, and 5b: The beryllium standards were changed from beryllium to beryllium(T) to reflect the correct fraction of beryllium that is protective of the use.

- Big Thompson Segment 1: The exception of Segment 2 was unnecessary and was deleted for clarity.

- Big Thompson Segment 6: Exceptions were for segments 7 through 10 were added for clarity.

- Big Thompson Segment 17: Exceptions for segments 18 and 19 were added for clarity.

- Cache la Poudre Segment 2b: An exception for Segment 1 was added for clarity.